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Supreme Court of the United States

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Supreme Court, U.S.
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STATE OF WASHINGTON, ET AL.,
Plaintiffs,

v.

GENERAL MOTORS CORPORATION, ET AL.,
Defendants.

SUPPLEMENTAL MEMORANDUM IN OPPOSITION TO MOTION FOR LEAVE TO FILE COMPLAINT

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IN THE

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OCTOBER TERM, 1971

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STATE OF WASHINGTON, ET AL.,
Plaintiffs,

VS.

GENERAL MOTORS CORPORATION, ET AL.,
Defendants.

SUPPLEMENTAL MEMORANDUM IN OPPOSITION TO MOTION FOR LEAVE TO FILE COMPLAINT

INTRODUCTION AND SUMMARY

On August 5, 1970, fifteen States (subsequently joined by three additional States) moved this Court for leave to file an original action for injunctive relief against the four major motor vehicle manufacturers and the Automobile Manufacturers Association. The complaint is in three counts, one under the federal antitrust laws, one under the "common law" of conspiracy in restraint of trade, and one under the state laws of public nuisance. The main relief sought is mandatory installation of emission controls in new and used vehicles.

Defendants filed a brief in opposition to the motion on October 6, 1970. On February 12, 1971,

plaintiff States filed a supplemental memorandum in support of the motion. On August 31, 1971, an *amicus* brief was filed by the City of New York and sixteen additional states, of which none is a plaintiff here but fourteen are plaintiffs in parallel federal district court actions. This Court has set plaintiffs' motion down for oral argument. 402 U.S. 940.

Defendants are filing this supplemental memorandum primarily to discuss three developments that have occurred since defendants' brief in opposition was filed: (1) this Court's decision of March 23, 1971, in *Ohio* v. *Wyandotte Chemicals Corp.*, 401 U.S. 493; (2) enactment on December 31, 1970, of the Clean Air Amendments of 1970 and the administrative actions recently taken under that law; and (3) the filing by many of the plaintiffs, in March of 1971, of identical or substantially similar complaints in the federal district courts. We also respond herein to several of the assertions contained in the *amicus* brief filed by the sixteen additional States and the City of New York.

In Part I of this Memorandum we show that the instant case fully satisfies the two *Wyandotte* tests for declining jurisdiction over an original action between a State and the citizens of other States. First, there are a number of other impartial forums available, in which any or all of plaintiffs' claims can be (and in fact are being) tried as fairly and expeditiously as they could be in this Court. Second, the ongoing regulation of the problem of vehicle emissions by federal and state legislative and administrative bodies is a cogent "reason of practical wisdom" for this Court to decline to assume the trial court role.

There are other cogent reasons as well. Trial of the equity claims in this Court, before the damage claims based on identical allegations by many of these same plaintiffs are tried by juries in the district courts, would conflict with this Court's decision in *Beacon Theatres, Inc.* v. *Westover*, 359 U.S. 500 (1959). And resort to a Special Master to conduct the trial, as plaintiffs suggest to get around this Court's obvious inability to sit as a trier of testimonial fact, would violate the salutary principles of *La Buy* v. *Howes Leather Co.*, 352 U.S. 249 (1957).

As we show in Part II, the Clean Air Amendments of 1970 completed the structure, begun in 1965, of a comprehensive federal legislative program for reducing vehicle emissions to a minimal level by a time certain. Administrative action to execute this program is well under way. In *Wyandotte* the mere possibility of legislative and administrative relief was an important reason for this Court to decline jurisdiction. Here a comprehensive program of legislative and administrative relief is an ongoing fact.

Amici tacitly concede that this program parallels the plaintiffs' request that this Court order emission controls installed on new vehicles. But they contend that the prayer for mandatory "retrofit" of control devices on used cars is not affected. As we further show in part II, for the Federal Judiciary to impose a retrofit obligation is not only impracticable but is also likely to conflict with the program of vehicle emission control adopted by Congress. In the Clean Air Act and its subsequent amendments, Congress deliberately focused the federal effort exclusively on new vehicle controls and reserved all questions of

retrofitting controls on used vehicles to the judgment and regulatory power of each of the States.

In Part III we show that plaintiffs here, by filing actions in the district courts alleging that those courts have jurisdiction of counts identical with all the counts in the instant complaint, have demonstrated the lack of any need to impose the burden of trying these complex cases upon the tightly-rationed time of this Court.[1] Nor is there any merit in the suggestion of *amici* that this Court must nevertheless assume jurisdiction of the proposed complaint in order to give the plaintiff States the opportunity to proceed jointly in a single action. If plaintiffs in fact believed (as defendants do not) that a joint trial of all their claims is feasible, nothing prevented the entire group of plaintiffs and *amici* from seeking that result by filing a joint complaint in a single district court, as eight of them in fact did.

We also show in Part III that the complaints of *amici* over the progress of the ongoing district court litigation are unfounded, and that defendants are doing more to expedite the evidentiary phase of the pretrial proceedings than are the plaintiffs.

In sum, trial of this complex litigation as an original action in the Supreme Court would offer no advantages over trial in the lower federal courts and, if

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[1] All the plaintiffs and fourteen of the seventeen *amici* here are plaintiffs in lower court antitrust actions arising out of the same subject matter as the original action sought to be instituted in this Court. Some of these lower court antitrust actions also involve "common law conspiracy" and "nuisance" claims identical with those in the instant complaint.

need be for any state law claims, in the state courts.[2] Whatever relief plaintiffs can obtain in this Court they can obtain in those courts. Trial of the cases here could be a severe strain on the resources of this Court, with no assurance whatever that the proceedings could be completed more justly, efficiently or expeditiously than by trial in the courts created for trial purposes followed, if needed, by appeal in the ordinary course.

I. Following the principles of the recent *Wyandotte* decision, the Court should decline to assume original jurisdiction over the plaintiffs' proposed complaint.

In *Ohio* v. *Wyandotte Chemicals Corp.*, 401 U.S. 493 (March 23, 1971), this Court declined to entertain Ohio's original action against American and Canadian chemical companies for pollution abatement.[3] The decision to decline jurisdiction was based on an analysis of the purpose of the Article III jurisdiction grant and on several practical considerations relating to the Court's paramount appellate role. The Court found that the policies underlying the grant of original jurisdiction were satisfied by the availability of an alternative and more desirable trial forum (401 U.S. at 500-01), and that substantial "reasons of practical wisdom" (*id.* at 499) for declining jurisdic-

[2] Plaintiffs may have no need to resort to their state courts, since a number of them have alleged in their district court complaints that these courts have pendent jurisdiction over the state law claims. See pp. 7-8, *infra*.

[3] The complaint sought to stop the introduction of mercury into Lake Erie; to require the defendants to remove from the Lake mercury already introduced, or provide funds to the state for such removal; and to recover damages for the harm done to the Lake.

tion were furnished by the activities of federal and local legislative and administrative bodies, better suited than the Supreme Court to deal with the complex technical and political problems raised by the complaint. 401 U.S. at 502-03.

The principles adhered to by this Court in *Wyandotte* apply with even greater force to the present motion.

1. *The Availability of Other Forums*

The Court in *Wyandotte* noted that Article III granted original jurisdiction to the Supreme Court in order to afford an impartial forum to a State seeking redress against citizens of another State where the courts of that other State might be—or appear to be—partial to their own citizens, and no other impartial forum was available. 401 U.S. at 500. In *Wyandotte*, where the complaint was grounded on an alleged violation of the state law of Ohio, the Court found that this Constitutional policy was not "implicated" by Ohio's complaint because at least one suitable alternative forum was, in fact, available—namely, Ohio's own state courts.

The instant case, of course, presents both federal and state law claims. As to the former, since plaintiffs plead a *federal* cause of action (namely, a violation of the federal antitrust statutes), the district courts have explicit jurisdiction over the antitrust claim. 28 U.S.C. § 1337 (1964). Where they had valid claims, many States have sought and obtained effective antitrust relief in actions filed in the district courts,[4] and as we discuss further in Part III below,

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[4] See cases cited in defendants' Br. in Opp. at 16, n.20. *Amici* repeatedly assert that a State unable to sue in its own courts (as on a federal antitrust claim) "should not be

the plaintiff States have now filed district court actions asserting the very same antitrust claim they present here. These suits, filed in the district courts of many plaintiff States by the States themselves, obviously do not subject the States to the risk of a forum biased in favor of the defendants.

As for the nuisance claim presented in the third count of the plaintiffs' complaint, it is obvious that a plethora of state court forums not partial to defendants is available. Plaintiffs' state law nuisance claim can clearly be filed in their own state courts. Plaintiff States have advanced no reason why they cannot, if they prefer, file this claim jointly in the state courts of a single plaintiff State.

Moreover, in the jurisdictional allegations of essentially identical district court complaints (treated more fully in Part III of this memorandum), a number of the plaintiffs here have pleaded that the same district courts hearing plaintiffs' antitrust claim have pendent jurisdiction to adjudicate the state nuisance law

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required to go anywhere else except this [Supreme] Court." Amici Br. at 9; also, at 6, 8. This is patently erroneous. It is well established that the availability of a federal district court affords a sufficient basis for this Court to decline to exercise its original jurisdiction. See *Massachusetts* v. *Missouri*, 308 U.S. 1, 19-20 (1930); *North Dakota* v. *Chicago & N.W. Ry.*, 257 U.S. 485 (1922). Cf. *Georgia* v. *Pennsylvania R.R.*, 324 U.S. 439, 464-68 (1945). See also *Case* v. *Bowles*, 327 U.S. 92, 97 (1946); *United States* v. *California*, 297 U.S. 175, 187 (1936); *United States* v. *Louisiana*, 123 U.S. 32 (1887); and *Ames* v. *Kansas*, 111 U.S. 449 (1884) (U.S. Const. Art. III, § 2, gives Supreme Court original but not exclusive jurisdiction of cases in which a State is a party). A contrary rule could substantially increase this Court's docket.

claim pleaded in the third count of the instant complaint. *E.g.*, *Washington* v. *General Motors Corp.*, Civil No. 71-611-R (C.D. Cal.), Complaint, Count III, para. 1-2. As these allegations suggest, the federal district courts are also available to try plaintiffs' nuisance claim if it and the federal antitrust claim both derive "from a common nucleus of operative fact," *United Mine Workers* v. *Gibbs*, 383 U.S. 715 (1966). If not, the state courts remain available.[5]

In sum, the first of the *Wyandotte* tests—availability of alternative forums not partial to the defendants—is fully satisfied here.

2. *The Technical and Political Complexity of the Cause*

The second *Wyandotte* test for deciding whether to exercise jurisdiction is the existence of "reasons of practical wisdom" which make the Supreme Court an inappropriate forum for this kind of original action. The Court in *Wyandotte* began by noting that

> "the course of this Court's prior efforts to settle disputes regarding interstate air and water pollution has been anything but smooth." 401 U.S. at 501.

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[5] If plaintiffs' second count, based on the "common law" of conspiracy, states a claim under federal law (as plaintiffs evidently believe, plaintiffs' Br. at 14-15), then the district courts obviously have jurisdiction under 28 U.S.C. § 1331 (as plaintiffs have pleaded below, *e.g.*, *Washington* v. *General Motors Corp.*, Civil No. 71-611-R (C.D. Cal.), Complaint, Count II, para. 1, 2). If, however, plaintiffs' second count is based on state law (see defendants' Br. in Opp. at 12), then under the *Gibbs* test there would appear to be pendent jurisdiction in the district courts. *Id.*

The Court referred to the "complex technical and political matters that inhere in all disputes of the kind at hand" (*id.* at 502). It observed that these difficulties were "severely compounded" by the fact that "a number of official bodies are already actively involved in regulating the conduct complained of . . . ." *Id.* Consequently, the Court concluded:

> "In view of all this, granting Ohio's motion for leave to file would, in effect, commit this Court's resources to the task of trying to settle a small piece of a much larger problem that many competent adjudicatory and conciliatory bodies are actively grappling with on a more practical basis." 401 U.S. at 503.

Technical and political matters of even greater complexity inhere in the control of motor vehicle emissions. Although plaintiffs try to frame their case here in conventional antitrust terms, their principal effort is not to seek ordinary antitrust relief. Instead, what plaintiffs ask from this Court is a novel type of relief never before granted in an antitrust case. They seek a decree requiring defendants, *inter alia*, to (1) "adopt and pursue an accelerated program of spending, research and development" to produce "fully effective" emissions control devices or a "pollution free engine" (Complaint, Prayer, para. 2), and (2) install such control devices "as the Court deems reasonable and proper," at defendants' own expense, on all used cars built "during or following" the alleged conspiracy. *Id.*, para. 4.

As we demonstrate in Part II, any court attempting to grant and enforce such relief would thereby constitute itself as nothing less than a full-fledged regulatory agency, without the benefit of legislative standards or agency expertise. Leaving aside the

disputed question of the power of any court to grant such novel equitable relief, any such judicial intervention would be unnecessary and unwise in view of the ongoing efforts (described in Part II below) of the Legislative and Executive Branches of the Federal Government, along with the parallel efforts of the States, to grapple with the identical issues.

The factual and policy issues being resolved by these legislative and administrative bodies are substantially more "formidable" (401 U.S. at 503) than those from which the Court drew back in *Wyandotte*. Notwithstanding the efforts of *amici* here to suggest that vehicle emissions control (and especially "retrofitting") is a simple matter, the legislative and administrative bodies actually responsible for control programs have found the subject to be highly complex. The Environmental Protection Agency, for example, has stated in a recent report to Congress that "a major technological challenge" faces the motor vehicle industry in its efforts to meet the emissions standards for the coming years.[6]

Similarly, reports of the Department of Health, Education and Welfare have indicated the multitude of interacting technological considerations involved in vehicle emissions control,[7] and the experience of the

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[6] EPA, Annual Report to the Congress of the United States In Compliance With Section 202(b)(4), Public Law 90-148, The Clean Air Act As Amended, at 1-9 (July 9, 1971). Extracts from this Report are reprinted for the convenience of the Court as Item 1 in the Separate Appendix to defendants' Supplemental Memorandum filed herewith.

[7] See, *e.g.*, HEW Control Techniques for Carbon Monoxide, Nitrogen Oxide, and Hydrocarbon Emissions from Mobile Sources, National Air Pollution Control Administration Publication No. AP-66 (1970). Extracts are printed as Item 2 of the Separate Appendix.

California legislature with retrofitting of crankcase emission controls is strong evidence of the complexity of the technical problems posed by vehicle emissions.[8]

Major antitrust cases usually require years of pretrial and trial proceedings, in which the documentary and testimonial strands of a decade or more of prior commercial and industrial activity are painstakingly unraveled. In the present cases, assuming plaintiffs have stated a claim upon which relief can be granted, this process will be complicated by the unusually complex and technical nature of the defendants' activities, involving a myriad of separate transactions relating to research, development and installation of many different kinds of emission control systems and devices. These cases deal not with traditional business practices of a settled industry, but with the frontiers of an arcane and still imperfectly understood technology, as they have advanced over a period of almost twenty years. Litigation of the present type presents great difficulties to *any* judicial tribunal. It is especially likely to overtax the resources

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[8] That experience, briefly stated, was that after the retrofit requirement was imposed, more than 20,000 complaints were received; that many vehicle owners reported "disastrous experiences" involving damage to their cars or exorbitant installation costs; and that the California legislature first suspended, and then sharply restricted, the retrofit requirement. See Transcript, Assembly [of the State of California] Interim Committee on Governmental Efficiency and Economy, August 7, 1964: Hearing on Motor Vehicle Repair and Smog Control Devices, at 1, 97; Assembly [of the State of California] Interim Committee Reports 1963-65, Vol. 8, No. 8, at 34; Cal. Stats., 1963, ch. 999, § 8, at 2267 (requiring retrofit); Cal. Stats., 1965, ch. 3, §§ 1, 2, at 872-73 (repealing requirement); Cal. Stats., 1965, ch. 2031, § 4, at 4609 (requiring retrofit only upon transfer of ownership). Relevant extracts from the foregoing materials are printed as Item 3 of the Separate Appendix.

of this Court, already strained by its increasing appellate responsibilities.

Nor is the technique of employing a Special Master to resolve complex factual issues, as plaintiffs suggest, one which this Court should be tempted to embrace. This Court observed in *Wyandotte* that it is basically "ill-equipped for the task of fact-finding," since it must necessarily function "without actually presiding over the introduction of evidence." 401 U.S. at 498. That handicap is especially disabling in the context of the present litigation, where the nature of the plaintiffs' antitrust claims—portraying an alleged conspiracy to delay and deceive—will require the triers of fact to hear extensive oral testimony and to base their determinations in substantial part upon their assessments of the credibility of live witnesses.

This Court has held that it was an abuse of discretion for a judge, assigned a much simpler antitrust trial than this one, to refer it for trial to a "temporary substitute appointed on an *ad hoc* basis." *La Buy* v. *Howes Leather Co.*, 352 U.S. 249, 259 (1957). Litigants, especially in complex antitrust cases, as the Court emphasized, are entitled to a trial presided over by the judge responsible for deciding the basic issues in the cause. It would hardly comport with the salutary decision in *La Buy* for the Court to accept original jurisdiction of the present action only to turn over all of the crucial testimonial aspects to a master of its own.[9]

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[9] Nor would such a course relieve the Court of the considerable burden of supervising the proceeding before the Master or reviewing his findings. A Master's findings and rulings do not have the force of law, and are merely recommendations to the Court. 5 J. Moore, Federal Practice ¶ 53.06 (2d ed. 1969).

3. *Special Disadvantages of Trial by this Court*

Amici urge that *Wyandotte* does not control the present case because plaintiffs' complaint here presents issues of federal antitrust law rather than local law. Amici Br. at 10-12. But this difference does not help plaintiffs, since it means that, as noted above, numerous additional impartial forums are available, namely, the various federal district courts, thus lessening the need for the exercise of original jurisdiction. In addition, it provides two other reasons why the Court should decline jurisdiction here.

This Court has previously expressed its dissatisfaction with the "great burden" imposed upon it by direct appeals from trial court antitrust decisions which "deprive [this Court] of the valuable assistance of the Court of Appeals." *United States* v. *Singer Manufacturing Co.*, 374 U.S. 174, 175 n.1 (1963). In the instant case, not only would the Court be denied the benefit of an evaluation of the trial record and clarification of the issues by an intermediate appellate court, this Court would also be forced to make the trial court record itself, and to decide in the first instance the countless legal questions involved in the pretrial and trial phases of what the Judicial Panel on Multidistrict Litigation foresaw would become "the largest and most complicated" litigation ever to come before it.[10] The Congress has recognized that this role is inappropriate for the Supreme Court by creating a system of inferior federal courts and conferring upon them jurisdiction to try antitrust

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[10] *In re Motor Vehicle Air Pollution Control Equipment*, 311 F. Supp. 1349, 1350 (J.P.M.L. 1970); and see *Brown Shoe* v. *United States*, 370 U.S. 294, 364 (1961) (Harlan, J.).

cases (and, except in certain cases brought by the United States, to hear intermediate appeals). There is no reason to short-circuit this system here.

To the contrary, there is an important reason why short-circuiting this system would be particularly inappropriate. The antitrust count of the complaint, like the other two counts, seeks equitable relief only, and hence would be tried by the Court without a jury. This count, however, is also the basis for damage claims by these same plaintiffs (and others) in the actions which all of them have filed in the district courts. Under the doctrine of *Beacon Theatres, Inc.* v. *Westover*, 359 U.S. 500 (1959), the claims for equitable relief which all these district court complaints also contain could not be tried separately to a judge before the damage claims are tried to juries, because to do so would prejudice defendants' Seventh Amendment right to jury trial of the damage claims.[11] For this Court to try the equitable claims presented in the first count of the instant complaint before the trial of the damage claims presented in the plaintiffs' district court complaints would be equally violative of defendants' rights.

Quite aside from the question of whether and to what extent this Court's findings and judgment in the instant action would be technically binding on the defendants in a later trial of the district court damage claims, they would, as a practical matter, have

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[11] See *Dairy Queen, Inc.* v. *Wood*, 369 U.S. 469 (1962); 5 J. Moore, Federal Practice ¶ 38.19[2] at 170, ¶ 38.37[2] at 299 n.13 (text & supp.) (2d ed. 1969); 2 Barron & Holtzoff, Federal Practice and Procedure § 894, at 82-85 (Wright ed. 1961).

a powerful and perhaps controlling effect.[12] And if this Court may not properly try the equitable claims of the present action before the district court damage claims are tried, there is plainly no point to accepting original jurisdiction, particularly since, as noted above, the district court complaints also include prayers for equitable relief overlapping the relief sought in this original action.

In *Wyandotte* this Court held that only the "strictest necessity" (401 U.S. at 505) would justify the Court's assumption of original jurisdiction over an interstate pollution case. Given the availability of many alternative forums, the difficulties of trying the case as an original Supreme Court action, and the activity of other competent governmental authorities, the element of necessity was found "totally lacking" in *Wyandotte*. *Id.* at 505. For similar reasons, it is equally absent in the case at bar.

II. The relief sought by plaintiffs herein is unnecessary and undesirable in light of the comprehensive legislative and administrative program, decisively strengthened by the Clean Air Amendments of 1970, for reducing vehicle emissions to a minimal level by a time certain.

In our earlier brief, we described the comprehensive pattern of emerging federal and state regulation

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[12] See *Blonder-Tongue* v. *University Foundation*, 402 U.S. 313, 320-27, 329-30 (May 3, 1971). Not only the plaintiffs and *amici* States, but numerous other governmental bodies and classes of private citizens have filed identical damage complaints in the district courts, and defendants' right to jury trial of the antitrust issues in these damage cases might also be prejudiced if this Court decided the original action first.

of motor vehicle emissions. We discussed the difficulties in reconciling plaintiffs' prayers for mandatory injunctive relief in this action with the dictates of the legislative program for emission control. *See* Br. in Opp. at 2-6, 20-24. Since that brief was filed, the Congress has passed and the President has signed the Clean Air Amendments of 1970, imposing drastic new emission control standards. The Environmental Protection Agency has begun to implement these requirements in detailed regulations.[13] These measures express and execute the best judgment of the Legislative and Executive Branches as to the steps necessary at the federal level to serve the public interest in the control of automobile emissions.

In *Wyandotte*, the mere possibility of some legislative relief was an important element in the Court's decision to decline to exercise its original jurisdiction. 401 U.S. at 502-03. Here a far-reaching and definitive legislative program is an accomplished fact. The complex task of administering the program is well under way. There is no occasion for this Court to depart from the principles it so recently reaffirmed.

1. *The Clean Air Amendments of 1970*

For a full understanding, the Clean Air Amendments of 1970 must be placed in their proper historical framework.

> "When the first federal air pollution control legislation was passed in 1955 [authorizing funds for research and related activities by the Public Health Service], there were no viable ongoing State programs at all. There was little interest

[13] See, *e.g.*, 36 Fed. Reg. 12652 *et seq.*, 12657 *et seq.*, 16905-06, 19697 (1971).

in the scientific community, and the public, by and large, equated air pollution with coal smoke and considered smog a problem unique to Los Angeles. It is no wonder that air pollution is regarded as a recently discovered phenomenon." Council on Environmental Quality, First Annual Report, *Environmental Quality* 62 (1970); see also, *id.* at 73-75.

In Los Angeles in 1953, after six years of regulating stationary sources, it was recognized that the automobile contributed significantly to the Los Angeles pollution problem.[14] That problem, termed "smog," was the result of a chemical reaction between unburned hydrocarbons—largely unburned gasoline—and nitrogen oxides, the latter being a chemical formed in every flame through the combination of the oxygen and the nitrogen in the air.

Commencing in 1953, the County of Los Angeles sought the assistance of the auto industry in an attempt to find a solution, and the industry responded by initiating the cooperative research and development program here under attack.[15] The first problem tackled was the development of measurement techniques and instrumentation. At the urging of

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[14] Report of the Subcommittee of the Assembly [of the State of California] Interim Committee on Governmental Efficiency and Economy, Study and Analysis of the Facts Pertaining to Air Pollution Control in Los Angeles County 14 (1953). Relevant excerpts from sources cited herein relating to the early history of vehicle emissions control in California are printed as Item 4 of the Separate Appendix.

[15] Report of the Assembly [of the State of California] Interim Committee on Transportation and Commerce, Motor Vehicle and Highway Problems 45 (Assembly Interim Committee Reports 1957-59, Vol. 3, No. 6, 1959).

the California authorities, the industry directed its efforts toward the development of "deceleration devices." When it was learned, however, that emissions during deceleration were a much smaller portion of total vehicle emissions than had been supposed, Los Angeles County declined to require installation of the devices.[16]

With the passage of time, the legislative emphasis shifted from the County to the State. Through the work of legislative committees, which sought and obtained the advice of industry committees, the necessity of defining the degree of control required was established. Standards were fixed, both for air quality and for auto exhaust emissions. This activity marked the start of regulation of automotive emissions.[17]

By 1965, interest in air pollution had become nationwide. Federal legislation relating, *inter alia*, to vehicle emissions was enacted in 1965, in 1967, and again in 1970.[18] Legislation prior to the 1970 Amendments is summarized in our earlier brief. In general, it directed the administrative establishment of "criteria" for air quality and the adoption of regu-

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[16] *Id.*; Transcript, Assembly [of the State of California] Interim Committee on Transportation and Commerce, December 1, 1958: Hearing on Automotive Smog Control, at 3-4.

[17] Cal. Stats. 1959, ch. 200, § 1, at 2091; Cal. Health & Safety Code, §§ 426.1, 426.5.

[18] Act of October 20, 1965, Pub. L. No. 89-272, 79 Stat. 992; Air Quality Act of 1967, Pub. L. No. 90-148, 81 Stat. 485; Clean Air Amendments of 1970, Pub. L. No. 91-604, 84 Stat. 1676. These provisions are codified at 42 U.S.C. § 1857 *et seq.* (1970).

lations fixing permissible levels of automotive emissions.

The 1970 Clean Air Amendments go beyond preexisting law in one critical respect: they establish what their principal author described as a final "deadline for the cleanup of the internal combustion engine in the passenger automobile." [19] The effect of the 1970 Amendments is to prohibit the sale of 1975 or later model-year motor vehicles which fail to reduce emissions of carbon monoxide and hydrocarbons to a level 97-98% below the emissions from uncontrolled vehicles.[20] As to emissions of oxides of nitrogen, 1976 and later model year vehicles must meet a comparable standard.[21] The spelling out of the standards and supervision of the automotive industry's compliance are entrusted to the Administrator of the Environmental Protection Agency, who is required to report annually to the Congress and to make "any

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[19] See 116 Cong. Rec. S20599 (daily ed. Dec. 18, 1970) (remarks of Senator Muskie).

[20] The Amendments require that the 1975 model vehicles meet emission standards for hydrocarbons and carbon monoxide 90% more stringent than the standards in force for 1970 vehicles. 42 U.S.C. § 1857f-1(b)(1)(A) (1970). The 1970 standards reduced hydrocarbons by almost three-quarters and carbon monoxide by about two-thirds in relation to uncontrolled vehicles. EPA, Annual Report to the Congress of the United States in Compliance with Section 202(b)(4), Public Law 90-148, The Clean Air Act As Amended, at 2-2 and 2-3 (July 9, 1971). Thus, the effect of the Amendments is to mandate reductions of approximately 98% for hydrocarbons and 97% for carbon monoxide. *Id.*, Fig. 1, at 6-2.

[21] 42 U.S.C. § 1857f-1(b)(1)(B) (1970).

recommendations for additional congressional action necessary to achieve the purposes of" the Act.[22]

As a practical matter, no decree that might be issued by this Court could reasonably be expected to replace, modify, or accelerate the imposition of the standards mandated by the Amended Act. We say this for three reasons. In the first place, the new standards are scheduled to be imposed within less than three years. Unless the law is amended, they *must* be imposed, assuming the longest extension permissible, within four.[23] It is highly unlikely that an original proceeding in this Court could result in a final decree by that time.[24]

In the second place, Congress acted with full awareness that the automotive industry did not possess the technology required to meet the new standards.[25] The 1970 Amendments were literally a demand that the industry "do the impossible" within a stated period (very much, as one Senator observed, in the manner of the Apollo program to put a man

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[22] 42 U.S.C. § 1857f-1(b)(4) (1970).

[23] The Administrator is statutorily prohibited from extending the effective date of the new standards for more than one year. 42 U.S.C. § 1857f-1(b)(5)(E) (1970).

[24] A useful chronology of original actions entertained by this Court appears in Note, *The Original Jurisdiction of the United States Supreme Court*, 11 Stan. L. Rev. 665, 701 *et seq.* (1959). A great number of them have required more than four years.

[25] See 116 Cong. Rec. S16093 (daily ed. Sept. 21, 1970) (remarks of Senator Muskie): "[I]f we thought the technology existed today [to meet the new standards] we would insist that it be incorporated in these cars today."

on the moon).[26] The 1970 Amendments were candidly designed to insure a maximum effort to solve the problem of vehicle pollution forthwith, regardless of the amounts of money and manpower required. It is difficult to see how the judiciary can be expected to order more.

Third, as noted above (pp. 9-11, *supra*), the establishment and enforcement of rules for the control of vehicle emissions are tasks far better suited to the legislative and administrative process than to "common law" case-by-case decisions of the judiciary. Effective vehicle emissions control requires the fact-gathering, policy-evaluation and rule-making capabilities of legislatures and administrative agencies. Courts are not equipped to make the policy trade-offs between, for example, more carbon monoxide emissions but less emissions of oxides of nitrogen.[27] Courts do not usually have before them all the parties interested in, and affected by, the solutions to a social problem of this type.[28] Where a comprehen-

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[26] See 116 Cong. Rec. S16258 (daily ed. Sept. 22, 1970) (remarks of Senator McIntyre).

[27] See EPA, Annual Report to the Congress of the United States in Compliance with Section 202(b)(4), Public Law 90-148, The Clean Air Act As Amended, at 1-9 (July 9, 1971):

> "One of the unfortunate aspects of motor vehicle emission control is that reducing levels of hydrocarbons and carbon monoxide, which is done primarily through increasing the efficiency of combustion, tends to make more difficult the control of oxides of nitrogen, whose formation is largely a function of heat combustion."

See also p. 28 n.37, *infra*.

[28] For example, the statute contemplates that as a matter of competitive fairness, standards and the means for measur-

sive regulatory scheme for the control of vehicle emissions has already been established, there is no need to rely on the *ad hoc* equitable powers of this Court or any other court over the particular defendants before it.

Nevertheless, in an effort to induce this Court to substitute a judicial emissions control program for that adopted by Congress, *amici* carefully cultivate the widespread misimpression that the motor vehicle is almost entirely responsible for the damage to health and property caused by air pollution, and that alleged violations of the antitrust laws by the motor vehicle manufacturers are responsible for the fact that the problem of air pollution has not been solved. *Amici* Br. at 27-30. None of this is true.

While transportation of all types is currently estimated to be the source of 51% of U.S. air pollution *on a weight basis*,[29] transportation generally, and motor vehicles in particular, are responsible for a much smaller fraction of total air pollution *on an environmental effects basis*. Using California air quality standards as the basis for measuring the environmental impact of each of the major air pollu-

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ing compliance must be uniform for all manufacturers of like vehicles. Yet many of the world's largest vehicle manufacturers, occupying substantial positions in the United States market, are not defendants in the present actions.

[29] Council on Environmental Quality, Second Annual Report, *Environmental Quality* 212 (1971). The contribution of automotive vehicles (cars, trucks, buses) is estimated, as of 1968, at 38.8%. See HEW, Nationwide Inventory of Air Pollutant Emissions, 1968, National Air Pollution Control Administration Publication No. AP-73 (1970) (computed from Tables 2, 4, 7, 9 and 11).

tants, two University of California researchers have placed the contribution of motor vehicles to total U.S. air pollution at only 12%.[30] While motor vehicles are a major source of pollution even on an environmental effects-basis in Los Angeles and some other cities where hot, dry, stagnant air and sun-

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[30] See Letter from Robert F. Sawyer and Lawrence S. Caretto (Dept. of Mechanical Engineering, University of California at Berkeley), "Air pollution sources reevaluated," 4 Environmental Science & Technology 453 (1970). The other contributors to air pollution are, on an environmental effects basis, industry—37%; power plants—36%; space-heating—10%; and refuse disposal—5%. Another academic study, using air quality criteria (the "pindex" method) and the earlier high tonnage figure for transportation, found transportation responsible for 19% of U.S. emissions, behind the industrial and electric power generation categories. *Babcock, A Combined Pollution Index For Measurement of Total Air Pollution,* 20 J. of Air Pollut. Control Ass'n 653 (1970).

The difference in the weight vs. effects measurements of vehicle emissions is primarily due to the automobile's relatively high emission of carbon monoxide, which is the least noxious of air pollutants on a mass-for-mass basis, and its minimal emission of sulfur oxides, a pollutant more than one hundred times as noxious as carbon monoxide. Eisenbud, *Environmental Protection in the City of New York,* 170 Science 706, 707 (1970); Sawyer & Caretto, *supra.*

The Council on Environmental Quality has recognized the misleading character of weight measurements of air pollutants and the importance of considering the effects of particular pollutants and their geographical distribution. See Council on Environmental Quality, Second Annual Report, *Environmental Quality* 213 (1971).

shine are common, most cities do not have this problem.[31]

Moreover, the national failure to appreciate the environmental implications of vehicle and other emissions at an early date cannot fairly be ascribed to the vehicle manufacturers alone. As the Council on Environmental Quality has explained, the failure is plainly a social and political one, growing out of the national commitment to economic growth and the public preferences for the increasing urbanization, industrialization and personal mobility that technology can provide.[32] Effective remedies for vehicle emissions have at all times depended upon a public decision to require development of emissions controls and, most importantly, to accept the very real economic and social costs of such a program. That decision has now been made and is in process of implementation by the regulatory agencies that Congress and the States have entrusted with the job.

Whether this essentially political decision could have been made earlier, and whether the technological obstacles to developing effective vehicle emissions

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[31] Eisenbud, *supra;* Sawyer & Caretto, *supra.* The principal ingredients of photochemical ("Los Angeles type") smog are hydrocarbons, oxides of nitrogen and sunlight, while "London type" smog is principally composed of the sulfur dioxide and particulates found in smoke and fumes from burning coal and oil. Chicago, for example, has London-type smog about one-third of the days of the year, and photochemical smog less than one per cent of the time. It is, of course, local differences of this kind which caused Congress to leave the control of used car emissions to the States.

[32] See Council on Environmental Quality, First Annual Report, *Environmental Quality* 12-16 (1970). Excerpts from this report are reprinted as Item 5 of the Separate Appendix.

control systems could have been surmounted more rapidly, are necessarily matters of conjecture which no court can possibly resolve. It is clear, however, that the alleged actions and omissions of the vehicle manufacturers—even if they had occurred—could have been no more than one contributing factor among many that were far more significant.[33]

2. *The Impropriety of a Federal Judicial "Retrofit" Program*

Amici strenuously urge that nothing in the emissions control program established by the Clean Air Act bars "retrofitting" (installing emissions control systems on used cars), and that retrofitting, at least, is a form of relief that the Court could and should order. Amici Br. *passim*, esp. at 21-26. In *amici's*

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[33] For example, the one specific allegation of delay in the complaint herein charges the defendants with having agreed to delay the installation of a crankcase ventilation valve on some new 1962 model year vehicles (and to delay an improvement thereon "in late 1962 and extending into 1963"). Complaint, para. 17(c)(1), (2). But the entire motor vehicle population accounts for less than half of the total annual hydrocarbon emissions in the U.S.; the crankcase accounts for only one-fifth of the automotive hydrocarbons emissions from an uncontrolled vehicle (and essentially no carbon monoxide or oxides of nitrogen); and the number of vehicles produced in any one model year is only about one-tenth of the total number of cars on the road. So the alleged delay could have affected no more than one one-hundredth of the total annual U. S. hydrocarbon emissions—or between one and two one-thousandths of total annual emissions of all known types of pollutants (since hydrocarbons represent only 15% by weight of total emissions). See HEW, Nationwide Inventory of Air Pollutant Emissions, 1968, National Air Pollution Control Administration Publication No. AP-73, at 3, 13 (1970); HEW, Control Techniques for Carbon Monoxide, Nitrogen Oxide, and Hydrocarbon Emis-

view, because "there is no federal regulation covering emissions on used cars or retrofitting," therefore "retrofit is solely a matter of judicial concern." *Id.* at 15. Several important omissions and over-simplifications render the argument wholly untenable.

In the first place, *amici* fail to note that in the Clean Air Act the Congress advertently left the problem of used car emission controls to the judgment and powers of the several States. In considering the Clean Air Amendments of 1970, Congress explicitly considered and rejected the proposal, reintroduced by plaintiffs here, for a federally-imposed retrofit program:

> "In considering alternative means of controlling emissions of air pollution agents from *used* vehicles, the Committee was unable to develop a feasible national system. The Committee rejected ideas ranging from the *imposition of a retroactive installation obligation on automobile manufacturers* to a Federal subsidy program." S. Rep. No. 91-1196, 91st Cong., 2d Sess. 13 (1970) (emphasis added).

The Senate Committee went on to state:

> "The Committee believes at this time that regulations relative to the retroactive application of emission control devices and methods is *manageable only at the State and regional level* and expects and hopes that the regions and States

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sions From Mobile Sources, National Air Pollution Control Administration Publication No. AP-66 (1970), at 2-12; Automobile Manufacturers Association, 1971 Automobile Facts and Figures, at 22. This small fraction would be even smaller on an environmental-effects basis. See pp. 22-23 & n.30, *supra*.

will be innovative in this area." *Id.*, at 13-14 (emphasis added).

For this Court to attempt to establish a particular retrofit program by federal judicial fiat would be fundamentally inconsistent with the Congressional scheme, and in disregard of the legislative findings as to the inadvisability of federal action in this area.

The Clean Air Act makes the States responsible for adopting and enforcing implementation plans to bring local air into compliance with the regional air quality standards.[34] As one part of this regulatory scheme, the power to regulate used car emissions is reserved to the States.[35] And the various kinds of requirements relating to used car emissions that different States may find feasible, appropriate and acceptable to their citizens may diverge radically from the used vehicle control requirements that plaintiffs would have this Court impose.[36] For example, because of the fact that measures reducing hydrocarbon emissions from used cars may increase emissions of nitrogen oxides, and *vice versa*, two different States may choose two entirely different kinds of used car control programs (or none at all), depending on local

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[34] 42 U.S.C. §§ 1857c-2, -5 (1970).

[35] 42 U.S.C. § 1857f-6a(c) (1970); S. Rep. No. 403, 90th Cong., 1st Sess. 34 (1967).

[36] For example, in 1963 California required that crankcase emission controls be installed within ten months beginning January 1, 1965, on used as well as new cars, but the requirement for used cars was first suspended, and then sharply restricted, before 1965 was over because it had "caused great concern and confusion throughout the state." Cal. Stats., 1965, ch. 3, § 3, at 873. See p. 11 & n.8, *supra*.

air conditions, population density, and other variables.[37]

Secondly, in their enthusiasm for a nationwide, judicially-imposed retrofit obligation, *amici* do not discuss the extent to which the imposition of this obligation on the manufacturers as to used cars would

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[37] For example, the California Air Resources Board reported to the State legislature in July of this year that it would not recommend establishment of a system of mandatory inspection and maintenance of used vehicles, in part because while such a system would reduce hydrocarbon emissions, it would increase oxides of nitrogen. See California Air Resources Board, A Report to the Legislature on Vehicle Emission Inspection (July 1, 1971). While rejecting inspection to control hydrocarbons, California has adopted a retrofit law designed to reduce oxides of nitrogen. See Los Angeles Times, Nov. 16, 1971, Pt. II, at 6, reporting enactment of S.B. 578. In contrast, the City of Chicago has adopted mandatory inspection aimed only at hydrocarbons and carbon monoxide. Chicago, Ill., Amendment to Chapter 17 of the Municipal Code, Art. IIA, Nov. 29, 1971. The State of New Jersey is evidently adopting a similar inspection program, also not involving nitrogen oxides standards. See New Jersey State Department of Environmental Protection, Notice of Public Hearing on Air Pollution Control Code, Proposed Chapter 15 (May 27, 1971). Excerpts from the foregoing materials are reprinted as Item 6 in the Separate Appendix.

For further elucidation of the conflict between controlling hydrocarbon emissions and controlling nitrogen oxide emissions, see HEW, Control Techniques for Carbon Monoxide, Nitrogen Oxide, and Hydrocarbon Emissions from Mobile Sources, National Air Pollution Control Administration Publication No. AP-66 (1970), extracts from which are contained in Item 2 of the Separate Appendix, and Hearings Before the Subcommittee on Air and Water Pollution of the Senate Committee on Public Works, *Air Pollution—1967 (Automotive Air Pollution)*, 90th Cong., 1st Sess. Pt. 1, at 238-41, 326 *et seq.*, 470 (1967).

actually conflict with the Congressionally-imposed obligation to create essentially pollution-free new automobiles by 1975. Senator Muskie, the principal architect of the Clean Air Amendments, explained the Congressional treatment of the new car-used car problem as follows:

> "There is a tendency to focus upon the new car provisions in the bill, and understandably so. Nevertheless, *what really moved the committee, the Senate, and the conferees to go in the direction of a tough deadline for new cars is the fact that there are used cars,* and the used car population creates a problem." 116 Cong. Rec. S20602 (daily ed., Dec. 18, 1970) (emphasis added).

Stating that these used cars are "beyond the reach, really, of any effective technological control development," the Senator went on to say that "to deal with the used car problem, we need a new car deadline in order to begin the process of cleaning up new used cars" that come onto the streets each year. *Id.* at S20602-03.

Rather than invoke federal power to require partially effective retrofit devices, Congress opted for fully effective new car controls. Before any court were to order the defendants to divert their resources and energies into a massive retrofit program, it would certainly have to consider the effect of such an order on the ability of each one of the several vehicle manufacturers to meet the new car deadlines that Congress preferred as the federally-imposed solution of the problem. At present, the Environmental Protection Agency is "moderately optimistic" that the vehicle manufacturers can overcome the "major technological challenge" facing them and meet the 1975

standards on schedule.[38] A massive judicial retrofit program could substantially and adversely affect the basis for this moderate optimism.

Any court contemplating such a departure from the Congressional choice would also have to consider whether independent automobile dealers and gas station operators have the necessary trained manpower and skills to install and maintain the particular kinds of retrofit devices involved, whether the necessary degree of public cooperation with the retrofit program could be obtained, and whether the time required for manufacture and installation of the devices would in any event take so many years that the beneficial effect on overall emission levels would be minimal.[39]

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[38] EPA, Annual Report to the Congress of the United States in Compliance with Section 202(b)(4), Public Law 90-148, The Clean Air Act As Amended, at 1-9, 1-10, and 5-17 (July 9, 1971).

[39] Additionally, before ordering retrofit at defendants' expense, the court would have to consider that even if plaintiffs' theory were correct and that, absent the alleged violation, some of the defendants would have introduced some control devices earlier, the cost of these devices would have been reflected in the prices defendants charged for their vehicles. Some of the defendant companies have in fact developed and test-marketed certain types of retrofit devices at moderate prices, but with total lack of market success. The reason, undoubtedly, is that to the average automobile owner, an emissions control device is, in economic terms, an "externality" that he does not perceive as worth the price in benefits to him, and that, if given a market choice, he will not purchase. See, *e.g.*, P. Samuelson, Economics 791-92 (8th ed. 1970); Gerhardt, *Incentives to Air Pollution Control*, 33 Law & Contemp. Prob. 358 (1968); Report of the Panel on Electrically Powered Vehicles to the Commerce Technical Advisory Board, *The Automobile and*

Obviously, all these issues call for essentially legislative, not judicial, choices.

Thirdly, given the constantly shrinking number of uncontrolled used vehicles on the road and the increasing stringency of the standards applicable to new models, it is obvious that plaintiffs' proposed retrofit remedy, in addition to its other defects, can be of little practical significance in reducing overall levels of air pollution. By the time this Court or any court could responsibly render a judgment granting the extraordinary retrofit relief plaintiffs seek, and by the time a retrofit program (with the necessary inspection and maintenance that would have to accompany it[40]) could be established, the overwhelming proportion of the used cars on the road would be the federally-controlled vehicles of the 1968 and subsequent model years.[41] At that point in time, the need or effectiveness of any judicial retrofit relief whatever would be, at best, open to serious question,

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Air Pollution: A Program for Progress, Pt. 1, at 36 (Dept. of Commerce Print, 1967); Ruff, *The Economic Common Sense of Pollution,* 19 The Public Interest 69 (1970); Posner, *Antitrust Policy and the Consumer Movement,* 15 Antitrust Bull. 361 (1970).

[40] See California Air Resources Board, A Report to the Legislature on Vehicle Emission Inspection (July 1, 1971), excerpts from which are reprinted in Item 6 of the Separate Appendix.

[41] The Automobile Manufacturers Association estimates that by July 1975, 77 million of the 100 million passenger cars then on the road will be 1968 or later models. (In 1970, 78% of the vehicles on the road were less than eight years old. See Automobile Manufacturers Association, 1971 Automobile Facts and Figures, at 22.)

even assuming the States had not acted on their own in the interim.[42]

Finally, even if retrofit were ultimately found after trial to be an appropriate and useful federal judicial remedy in this case, both the trial and the remedy, as we show in the next section of this Memorandum, could be more efficiently provided in the cases plaintiffs have filed against defendants in the federal district courts, with such appellate review as this Court deems appropriate when and if the occasion should arise. There is nothing so simple or magical in the proposed retrofit remedy, or in the imagined power of this Court to provide that remedy more quickly, that would justify trying one of the most complicated fact cases in modern times before a court so admittedly "ill-equipped for the task of fact-finding" and so heavily burdened with other responsibilities. *Ohio* v. *Wyandotte Chemicals Corp.*, 401 U.S. at 498.[43]

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[42] The States' implementation plans for attaining the national ambient air standards within their boundaries by 1975 are to be submitted to the Environmental Protection Agency by January 30, 1972. EPA, Annual Report to the Congress of the United States in Compliance with Section 202(b)(4), Public Law 90-148, The Clean Air Act As Amended, at 4-4 (July 9, 1971). These plans are "expected to include a variety of abatement strategies and contribute greatly to our understanding of the significance of motor vehicle emissions control." *Id.*

[43] Defendants feel constrained to comment on the grossly misleading assertion by *amici* that used cars now on the road can be retrofitted with exhaust controls which are "precisely" the same ones that "the manufacturers conspired to block" and that California would have ordered installed on 1966 models, "had not the auto manufacturers blocked this advance by hurriedly proposing engine modifications." *Amici*

III. Plaintiffs' complaints in the district courts, and the proceedings currently in progress under the direction of Multidistrict Litigation Panel, demonstrate that there is no necessity for this Court to exercise original jurisdiction over plaintiffs' proposed complaint herein.

All of the eighteen plaintiffs in the instant case have now filed actions identical or substantially sim-

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Br. 24-25. The true facts, as contained in official reports, are quite different.

Four exhaust control devices, produced by manufacturers other than defendants here, were certified by the California Motor Vehicle Pollution Control Board in 1964; but three of the devices were approved only for installation on *new* 1966 model cars, not for retrofit on used cars. Calif. Motor Vehicle Pollution Control Board, Resolutions 64-12, 64-13, 64-14 and 64-15 (June 17, 1964). (The one device certified for installation on used cars as well could not be produced by its manufacturer for sale at a price within the $65 limit set by California law. See Transcript, Assembly [of the State of California] Committee on Transportation and Commerce, March 8, 1966: Hearing on Air Pollution Control, at 4; Calif. Motor Vehicle Pollution Control Board, Summary of Report on Exhaust Control Devices of American Machine & Foundry Company—Chromalloy Corporation, June 10, 1964, at 3-4.) The defendants made their proposals for exhaust emission control (which were made possible by the cooperative industry effort here under attack) *in order to meet* the new California emissions standards for 1966 cars that became operative upon the certification of these four devices, *not* to block implementation of the standards. Defendants' various proposals for their 1966 model cars were approved by the Control Board, with an exemption for that small part of their 1966 model production that they could not engineer into conformity. California Motor Vehicle Pollution Control Board, Resolution 64-36 (November 18, 1964); California Motor Vehicle Pollution Control Board, Resolution 65-2 (January 20, 1965); California Motor Vehicle Pollution Control Board, Resolutions 65-17, 65-18, 65-19, 65-20 and 65-21 (July 14, 1965).

The Board in fact congratulated General Motors, Ford, Chrysler, and American Motors on their "significant contribution" and urged them to continue their "outstanding developmental efforts." California Motor Vehicle Pollution Con-

ilar to this one in various federal district courts.[44] Plaintiffs allege in their complaints below that the federal district courts have jurisdiction to try all of the counts in all of their cases, and to grant all the relief—including the "retrofit" relief—they seek from this Court. Neither in their communications to this Court, nor elsewhere, have plaintiffs disavowed

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trol Board, Resolutions 64-18, 64-19, 64-20, and 64-21 (August 12, 1964). By contrast, the Board later effectively decertified the four devices of the other manufacturers because they required regular maintenance, and the State legislature, in response to public protest, had refused to give the Board authority to impose on vehicle owners the compulsory maintenance requirements upon which the certification of the devices was predicated. California Motor Vehicle Pollution Control Board, Resolution 65-26 (September 15, 1965). See also IV [California] Motor Vehicle Pollution Control Board Bulletin 1, 2 (September 1965).

Excerpts from the items cited above are reprinted as Item 7 of the Separate Appendix.

[44] The district court proceedings initiated by the eighteen plaintiffs herein are listed in Appendix A of this Memorandum. (The total of eighteen includes two States whose pending motions for leave to join in the complaint as parties plaintiff have not yet been acted on by the Court.) All of these district court complaints contain one or more federal antitrust counts containing the same allegations as the complaints sought to be filed herein, and all of them pray for damages as well as injunctive relief. Two of the complaints, brought by eight of the plaintiffs here plus one State not a plaintiff in this Court (Nevada), also contain counts identical with the second and third counts of the instant complaint. *Washington* v. *General Motors Corp.*, Civil No. 71-611-R (C.D. Cal.); *Kansas* v. *General Motors Corp.*, Civil No. T-4896 (D. Kan.). As previously noted, *supra*, pp. 7-8, these complaints allege that the district courts have federal question jurisdiction over the second count and pendent jurisdiction over the third count.

these allegations.[45] The filing of these district court complaints, and the resulting proceedings currently in progress under the direction of the Multidistrict Litigation Panel, provide conclusive proof (not present in *Wyandotte*) that there is no need to impose the responsibility for conducting the trial of this complex litigation upon the tightly-rationed time of the Supreme Court.

Faced with the reality of these ongoing proceedings below, *amici* seek refuge in the argument that this Court must nevertheless assume original jurisdiction over plaintiffs' claims in order to enable plaintiffs to proceed jointly in a single action and thereby avoid "the necessity of time-consuming and duplicative litigation in numerous district courts and courts of appeal." *Amici* Br. at 9. But the decision whether to file separately or jointly, in several districts or in one district, was wholly within plaintiffs' control. While eleven plaintiff States filed separately in district courts located in their own States, seven plaintiff States as widely separated as Hawaii and Maine joined with one *amicus* State (Nevada) in filing a single complaint in the Central District of California. In defendants' view, there are many practical reasons why a single consolidated trial of the claims of all the plaintiff States is not feasible in this or any other court. But if plaintiffs genuinely held the contrary view, they obviously were free to

[45] By letter dated April 7, 1971, addressed to the Clerk of the Court, defendants informed the Court of these filings. Plaintiffs responded by telegram dated April 15, 1971, with the assertion that the district court actions had been filed merely as a "standby" to avoid the possible effect of the statute of limitations upon district court claims should this Court deny the motion for leave to file.

seek a single trial by filing a joint complaint in one of the district courts. They cannot contend that an original action in this Court was the only way to pursue that objective.

On the other hand, if it is consolidated pretrial proceedings that plaintiffs seek, again they need not come here for relief. Plaintiff States—and *amici* States as well—are parties to the consolidated pretrial proceedings presently taking place in the Central District of California, which also include complaints filed by other governmental bodies and private citizens.[46] Nevertheless, in a further effort to avoid the obvious fact that those consolidated proceedings contradict the asserted need to proceed in an original action in this Court, *amici* complain, albeit in a rather tentative way, about the rate of progress below. *Amici* Br. at 26-30. They urge that this Court should attempt to expedite the litigation by assuming original jurisdiction over plaintiffs' complaint, in which event *amici* "will seek leave to join as plaintiffs here." *Amici* Br. at 1.

Amici do not explain, however, what they would do with their pending district court cases and the damage claims those cases contain, nor do they suggest what would happen to the district court cases filed by the ten other plaintiffs who are not *amici* here and who, since they are not States, cannot file

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[46] The district court actions that have been filed by fourteen of the seventeen *amici* and a number of other parties, arising out of the same subject matter as the original action sought to be commenced here, are listed in Appendix B. All cases, including the district court cases recently filed by plaintiffs herein, have been transferred to the Central District of California for consolidated pretrial proceedings pursuant to 28 U.S.C. § 1407.

original actions in this Court.[47] In any event, without repeating the previous discussion of the difficulties which this Court would have in superseding the trial of some but not all of the previously filed complaints in the district courts, several points need to be made about the allegedly slow pace of the actions below.

Amici appear to be chiefly disturbed by the fact that the District Court has certified for interlocutory review, and the Court of Appeals for the Ninth Circuit has accepted, appeals from the District Court's orders denying defendants' motions to dismiss which were filed in all but two of the consolidated actions and rejecting, in part, defendants' challenges to certain of the class actions and *parens patriae* claims.[48] All briefs in those appeals have been filed, defendants did not object to plaintiffs' request that oral argument be expedited, and the Court of Appeals has scheduled that argument for January 13, 1972.

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[47] Similarly, *amici* do not attempt to show any basis for this Court's original jurisdiction over an action by the one of their number which is not a State, namely, City of New York.

[48] In the District Court proceedings defendants moved to dismiss, primarily on the ground that plaintiffs had no relationship, direct or indirect, to the line of commerce allegedly restrained. See *Conference of Studio Unions* v. *Loew's, Inc.*, 193 F.2d 51 (9th Cir. 1951), *cert. denied*, 342 U.S. 919 (1952). In addition, defendants challenged the authority of the governmental unit plaintiffs to sue *parens patriae* and challenged the propriety of the class actions, which had been filed on behalf of classes as broad as every resident of the United States. The District Court denied the motion to dismiss, and granted in part and denied in part defendants' objections to the *parens patriae* claims and the class actions. The District Court thereafter certified these issues to the Court of Appeals as appropriate for interlocutory review under 28 U.S.C. § 1292(b).

More importantly, no stay of discovery or other pretrial proceedings has been sought by defendants pending this interlocutory appeal. By agreement, the mass of documents compiled by the government in connection with its earlier investigation of the defendants' cooperative research and development program was made available to plaintiffs, and it has evidently taken plaintiffs considerable time to examine, classify and analyze these papers. Beyond this, however, it has been *defendants* who initiated pretrial evidentiary proceedings by seeking and obtaining, without plaintiffs' support, a district court order dated September 8, 1971, commencing a deposition program—now under way—to take the testimony of certain retired employees. It ill behooves *amici*, who are plaintiffs below, to charge defendants with attempting to delay the lower court proceedings.[49]

Finally, defendants are puzzled by *amici's* evident concern that the congressional emission control program, together with the manufacturers' efforts to meet the stringent legislative goals, may solve the entire vehicle emissions problem before the massive litigation launched by plaintiffs and others can be brought to a definitive conclusion. If this is so, it merely bears witness to the superiority of legislative and administrative action to resolve the problem of vehicle pollution, as compared to the type of judicial relief sought by plaintiffs. It affords no reason for

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[49] Cf. Transcript of Proceedings, November 22, 1971, at 49, *In Re Multidistrict Vehicle Air Pollution*, M.D.L. Docket No. 31 (C.D. Cal.) (remarks of Judge Manuel L. Real): ". . . the delays in this [initial] deposition [of a retired General Motors employee] have been the delays of the plaintiff and not the defendant."

this Court to seek to compete either in speed or in substance with the legislative and administrative processes, or for this Court to take over, so far as plainly judicial responsibilities are concerned, the duties currently being discharged in this and related litigation by the federal trial and intermediate appellate courts.

The Chief Justice, in a recent review of the Court's work, reiterated the concern expressed in *Wyandotte* over the need to safeguard the Supreme Court's "paramount role as the supreme federal appellate court" (401 U.S. at 505):

> "[W]e cannot keep up with the volume of work and maintain a quality historically expected from the Supreme Court . . . .
>
> "Either the quantity or quality of the work of the Court must soon yield to the realities." [50]

Plaintiff States are presently pursuing their claims in other forums better suited than this Court to sort out the factual and legal complexities of the cases they plead, and with as much power as this Court to grant the relief they seek. Yet in disregard of this Court's other manifold responsibilities, they ask it to assume the heavy burden of a proceeding duplicative of the district court proceedings and, in its basic thrust, either duplicative of or potentially in conflict with legislative and administrative efforts at the federal and state levels to resolve the same problems.

Over the next several years, this Court may well find it necessary to function as the appellate court

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[50] Burger, *The State of the Federal Judiciary—1971*, 57 A.B.A.J. 855 (1971).

of last resort to review some of the more important legislative, administrative and judicial decisions that will emerge from these ongoing activities. This task alone may require a substantial commitment of the Court's resources. No justification has been shown for asking the Court to assume the added burden of acting as the trial court of first resort for this one set of exceedingly complex and time-consuming cases.

CONCLUSION

Accordingly, leave to file the complaint herein should be denied.

Respectfully submitted,

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APPENDIX A

Plaintiffs

Arizona v. *Automobile Mfrs. Ass'n*, Civil No. 71-174 PHX-WPC (D. Ariz.).

Illinois v. *Automobile Mfrs. Ass'n*, Civil No. 69 C 2194 (N.D. Ill.).

Iowa v. *Automobile Mfrs. Ass'n*, Civil No. 10-231-C-2 (S.D. Iowa).

Kansas v. *General Motors Corp.*, Civil No. T-4896 (D. Kan.).

Massachusetts v. *Automobile Mfrs. Ass'n*, Civil No. 71-622-M (D. Mass.).

Minnesota v. *Automobile Mfrs. Ass'n*, Civil No. 3-70-205 (D. Minn.).

Missouri v. *Automobile Mfrs. Ass'n*, Civil No. 19192-2 (W.D. Mo.).

Ohio v. *Automobile Mfrs. Ass'n*, Civil No. 71-51 (S.D. Ohio).

Rhode Island v. *Automobile Mfrs. Ass'n*, Civil No. 4552 (D. R.I.).

Vermont v. *Automobile Mfrs. Ass'n*, Civil No. 6232 (D. Vt.).

Virginia v. *Automobile Mfrs. Ass'n*, Civil No. 190-71-R (E.D. Va.).

Wahington, et al. (Wash., Colo., Hawaii, Idaho, Maine, W. Va., N.D.) v. *General Motors Corp.*, Civil No. 71-611-R (C.D. Cal.).

APPENDIX B

Amici

Alabama v. *Automobile Mfrs. Ass'n*, Civil No. 3285-N (M.D. Ala.).

California v. *Automobile Mfrs. Ass'n*, Civil No. 70-541-R (C.D. Cal.).

Florida v. *Automobile Mfrs. Ass'n*, Civil No. 1698 (N.D. Fla.).

Louisiana v. *Automobile Mfrs. Ass'n*, Civil No. 71-645 (E.D. La.).

Mississippi v. *Automobile Mfrs. Ass'n*, Civil No. 4849 (S.D. Miss.).

Washington, et al. (Nevada) v. *General Motors Corp.*, Civil No. 71-611-R (C.D. Cal.).

New Mexico v. *American Motors Corp.*, Civil No. 69-C-2040 (N.D. Ill.)

New York v. *Automobile Mfrs. Ass'n*, Civil No. 69-Civ. 5037 (S.D. N.Y.).

Oklahoma v. *American Motors Corp.*, Civil No. 71-155 (W.D. Okla.).

Pennsylvania v. *Automobile Mfrs. Ass'n*, Civil No. 71-610 (E.D. Pa.).

South Dakota v. *General Motors Corp.*, Civil No. 71-14W (D. S.D.).

Texas v. *Automobile Mfrs. Ass'n*, Civil No. CA-3-4584-D (N.D. Tex.).

Wisconsin v. *General Motors Corp.*, Civil No. 70-C 70 (W.D. Wis.).

City of New York v. *Automobile Mfrs. Ass'n*, Civil No. 70-1535 (S.D. N.Y.).

Others

AMF, Inc. v. *General Motors Corp.*, Civil No. 70-4665 (S.D. N.Y.).

Connecticut v. *American Motors Corp.*, Civil No. 70C-417 (N.D. Ill.).

City of Denver v. *American Motors Corp.*, Civil No. 70C-418 (N.D. Ill.).

Grossman v. *Automobile Mfrs. Ass'n*, Civil No. 69-1855-R (C.D. Cal.).

Handy v. *General Motors, Inc.*, Civil No. 69-1548-R (C.D. Cal.).

Keane v. *General Motors Corp.*, Civil No. 69-C 1900 (N.D. Ill.).

Kentucky v. *Automobile Mfrs. Ass'n*, Civil No. 375 (E.D. Ky.).

County of Lackawanna v. *Automobile Mfr.'s Ass'n*, Civil No. 70-398 (E.D. Pa.).

Morgan v. *Automobile Mfrs. Ass'n*, Civil No. 70-366 (E.D. Pa.).

New Jersey v. *American Motors Corp.*, Civil No. 69C-2041 (N.D. Ill.).

City of Philadelphia v. *Automobile Mfrs. Ass'n*, Civil No. 70-345 (E.D. Pa.).

Puerto Rico v. *Automobile Mfrs. Ass'n*, Civil No. 190-71 (D. P.R.).

Sturtz v. *General Motors Corp.*, Civil No. 69-1892-R (C.D. Cal.).

City of New York v. *Automobile Mfrs. Ass'n*, Civil No. 70-1535 (S.D. N.Y.).

Others

AMF, Inc. v. *General Motors Corp.*, Civil No. 70-4665 (S.D. N.Y.).

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Sturtz v. *General Motors Corp.*, Civil No. 69-1892-R (C.D. Cal.).

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No. 45 Original

IN THE

Supreme Court of the United States

OCTOBER TERM, 1971

STATE OF WASHINGTON, ET AL.,
Plaintiffs,

v.

GENERAL MOTORS CORPORATION, ET AL.,
Defendants.

SEPARATE APPENDIX TO DEFENDANTS' SUPPLEMENTAL MEMORANDUM

(Names and addresses of attorneys on inside cover.)

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ITEM 1—Overview of the Vehicle Emissions Problem

A. *Summary and Conclusions from EPA Annual Report on Vehicle Emissions**

The Clean Air Act as amended charges the Administrator of the Environmental Protection Agency with major responsibilities for the control of motor vehicle emissions. These duties include: establishing emission standards for pollutants which endanger public health and welfare; administrating a number of related activities concerned with vehicle testing, certification and enforcement; regulating the content of fuels; demonstrating the feasibility of low-emission vehicles; monitoring the development of improved devices to control emissions from internal combustion engines; and directing research and development activities related to alternative power systems.

In addition Sections 202(b)(1)(A) and 202(b)(1)(B) require that:

(1) 1975 automobiles achieve a 90% reduction in the emissions of hydrocarbons (HC) and carbon monoxide (CO) which were allowable in 1970, and

(2) 1976 automobiles achieve a 90% reduction in the emissions of oxides of nitrogen (NO_x) from the average levels measured on 1971 automobiles which were not subjected to any federal or state NO_x emission standards.

* * * *

Since the establishment of the Environmental Protection Agency on December 2, 1970, EPA has completed a number of actions related to the control of

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* Environmental Protection Agency, Annual Report to the Congress of the United States in Compliance with Section 202(b)(4), Public Law 90-148, the Clean Air Act As Amended (July 9, 1971), at 1-1 to 1-10.

emissions from motor vehicles. An initial contract has been signed with the National Academy of Sciences to identify the resources necessary to study the technological feasibility of attaining the 1975 and 1976 standards.

EPA has published an advance notice of proposed rule-making indicating its intention to control or prohibit the use of alkyl lead in motor vehicle gasoline.

* * * *

In February, the Administrator sent a letter to all domestic and foreign auto manufacturers requesting information about research and testing activities related to the development of emission control systems designed to meet the 1975 and 1976 standards. EPA also conducted two days of public hearings on this subject during May of 1971.

* * * *

EPA has published certification test results for 1971 model vehicles and engines. National ambient air quality standards have been promulgated which include motor vehicle related pollutants. Regulations have been proposed defining the useful life of vehicles and requiring the inclusion in owners' manuals of maintenance instructions for emission control systems. Specific numerical standards and test procedures have been established for 1975 and 1976 emissions of HC, CO and NO_x.

Demonstration programs relating to low-emission vehicles have been initiated.

* * * *

The Low-Emission Vehicle Certification Board prescribed by Section 212 of the Act has been established.

* * * *

EPA is also directing a research and development program for low-emission vehicular power systems other than the internal combustion engine.

* * * *

Chapter 4 deals with the health and welfare effects of motor vehicle related pollutants. While vehicular emissions are important sources of pollution, especially in congested urban areas, they are not the only sources of these contaminants. In discussing health and welfare impacts it is important to note that it is ambient air quality, the composition of a local air mass, rather than emission levels from particular sources, which is the significant factor although the two are clearly related.

It is difficult to generalize about the relative importance of various contributions of the same air contaminants to ambient air quality because most air masses undergo lateral movements. Thus relative impacts must be looked at in terms of specific localities reflecting differences in geography, meteorological conditions, traffic patterns and the size and locations of all sources of the same pollutants.

A detailed discussion of the progress reported by industry is contained in Chapter 5. This material describes a number of control devices under development and outlines some of the technical problems facing the industry. This material also reiterates a number of concerns expressed by the manufacturers in their communications with EPA.

The final section of this report, Chapter 6, deals with the costs associated with motor vehicle emission control.

* * * *

Neither the final control system needed to achieve the 1975 standards nor the technology for attaining the 1976 standards, have yet been identified. Thus, the cost figures contained in Chapter 6 must be considered preliminary and include informal industry estimates of initial costs ranging from $80 to $600 per car for 1975. However, it appears clear that the costs associated with 1975 and 1976 standards will be considerably greater than those experienced in reaching Federal emission standards through 1974.

Information provided to EPA by auto manufacturers revealed a significant increase in emission control systems research and development activity since the passage of the 1970 amendments to the Clean Air Act. During the first six months of accelerated development, industry laboratories have reported the attainment of reduced emission levels. While there are many problems to be overcome to convert laboratory results into reduced emission levels from mass-produced autos, the added industry effort should improve prospects for significant technological improvements.

* * * *

During the recent public hearings industry spokesmen expressed major reservations about the technological feasibility of achieving the statutory emission standards within the time limits prescribed by law. The manufacturers were unanimous in asserting that the levels of reduction required for 1975/76 precluded the substitution of alternative power systems, making it essential that emission control be achieved through an improved internal combustion engine. Industry representatives consistently stated that reaching the 1976 NO_x emission levels goes beyond the limits of current knowledge and will require some major tech-

nological breakthrough early enough to permit mass production of 1976 models. They also expressed concern about the high cost of attaining the low levels of emissions required by the statute.

At these same hearings representatives of public interest organizations were skeptical of industry statements about their inability to develop the necessary technology to reduce emissions to the required levels. These witnesses pointed to previous instances of resistance by the industrial community to deadlines which were ultimately achieved. Suspicion was also voiced about the vigor of government enforcement concerning interim standards and test procedures. This climate of mistrust makes it important that, to the degree possible, matters related to motor vehicle emission control be given full public exposure.

Motor vehicle emissions are important sources of HC, CO, and NO_x pollutants especially in congested urban areas. However, they are not the only sources of these contaminants. The specific contribution of vehicle emissions to the degradation of ambient air quality is a complex matter and varies from place to place. These variations are attributable to differences in geography, meteorological conditions, traffic patterns, and the size and location of other sources of these pollutants. More information on these matters is expected with the completion of State implementation plans required under the legislation. These plans are also expected to include a variety of alternative abatement strategies. With additional information about the costs and effectiveness of emission control from all types of sources, it should be possible to undertake detailed cost-effectiveness analyses in order to insure that the ambient air quality standards are achieved at the most reasonable cost to the American people.

One of the unfortunate aspects of motor vehicle emission control is that reducing levels of hydrocarbons and carbon monoxide, which is done primarily through increasing the efficiency of combustion, tends to make more difficult the control of oxides of nitrogen, whose formation is largely a function of the heat of combustion. Thus, a major technological challenge faces the Nation's auto industry in meeting these emission standards.

EPA is moderately optimistic that the 1975 standards can be attained especially since it is expected that unleaded gasoline will be generally available at that time. We are also hopeful that technological developments will enable the manufacturers to reach the 1976 standards. However, the costs associated with achieving these standards may be high. Therefore, the Agency is not recommending any legislative changes at this time, although they may be needed in the future.

B. *Relationship of Emissions Control to Air Quality Standards: EPA Annual Report**

As indicated in Chapter 4, the control of auto emissions is an important element in achieving the ambient air standards for HC, CO, NO_x, and photochemical oxidants. However, the relationships between automobile emissions control and the achievement of national ambient air quality standards is extremely complex. For example:

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* Environmental Protection Agency, Annual Report to the Congress of the United States in Compliance with Section 202(b)(4), Public Law 90-148, The Clean Air Act As Amended (July 9, 1971), at 6-6 to 6-10.

a) Motor vehicles are not the only important sources of HC, CO, and NO_x. . . .

b) The significance of auto emissions upon ambient air quality varies from place to place, and therefore so does the effectiveness of auto emission controls compared to controls over other sources.

c) The cost of HC, CO, and NO_x control for motor vehicles are interrelated since some types of HC and CO control make it more difficult to reduce emissions of NO_x.

d) Meeting the 1975/76 standards will have a cumulative impact over time on air quality as new controlled vehicles replace older models in the automobile fleet. This can be seen on Figures 3, 4, and 5 [included: see pp. 8-10, *infra*], which depict EPA estimates of future national levels of NO_x, HC and CO emissions from gasoline-fueled motor vehicles assuming all future Federal standards are achieved. The graphs do not reflect the possible impact of modifying used vehicles to attain emission reductions.

Considerations such as these are particularly important in attempting to find the least cost means of achieving ambient air quality standards, since the impact of achieving various reductions in automobile emissions will influence the costs of reducing pollutants from other sources. Other sources of particular pollutants (e.g., NO_x from power plants) may be so important in some areas that the reduction of automobile emissions will contribute relatively little to meeting ambient standards in that area.

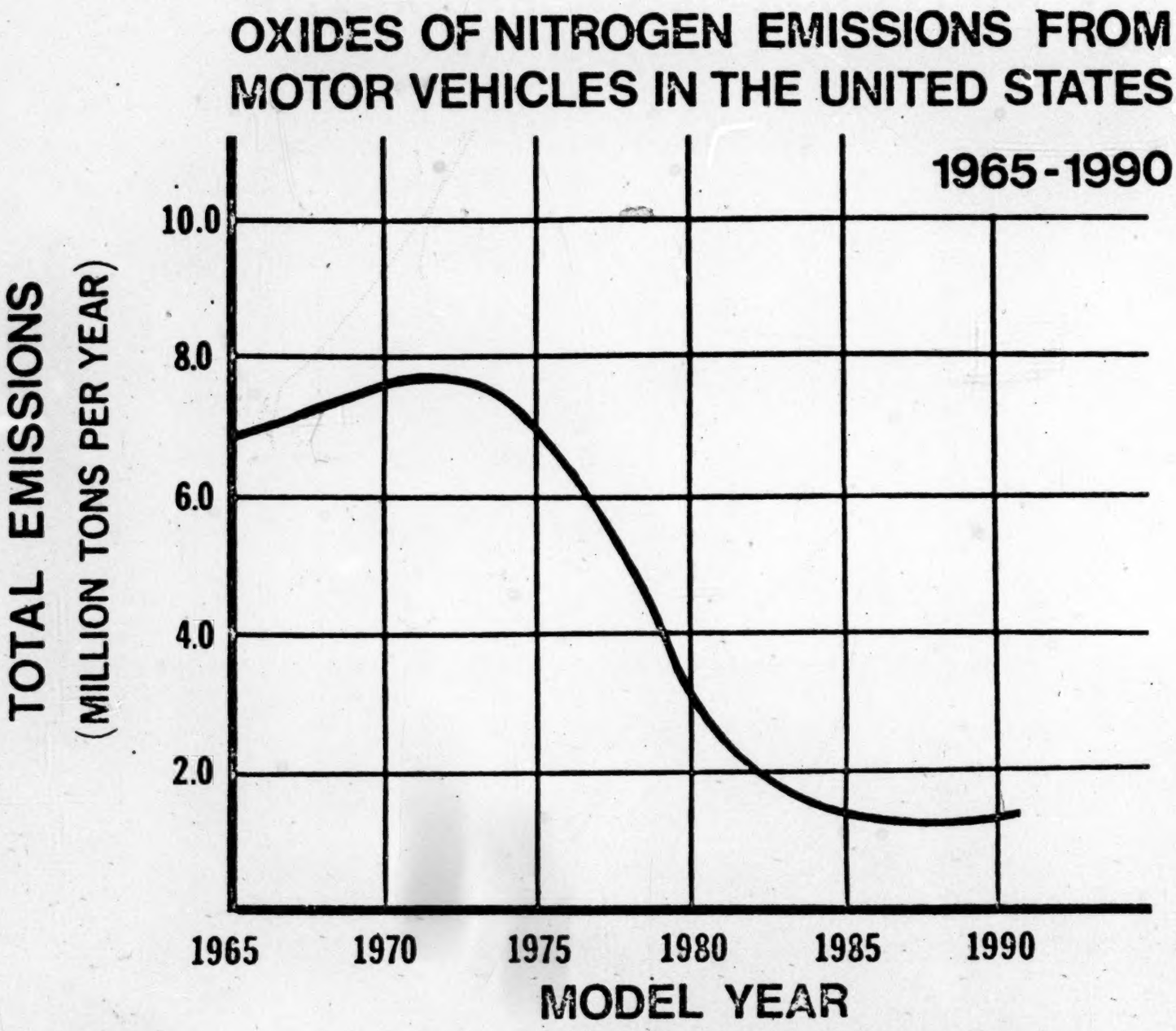

FIGURE 3

PROJECTIONS BASED ON ACHIEVING ALL FEDERAL EMISSION STANDARDS

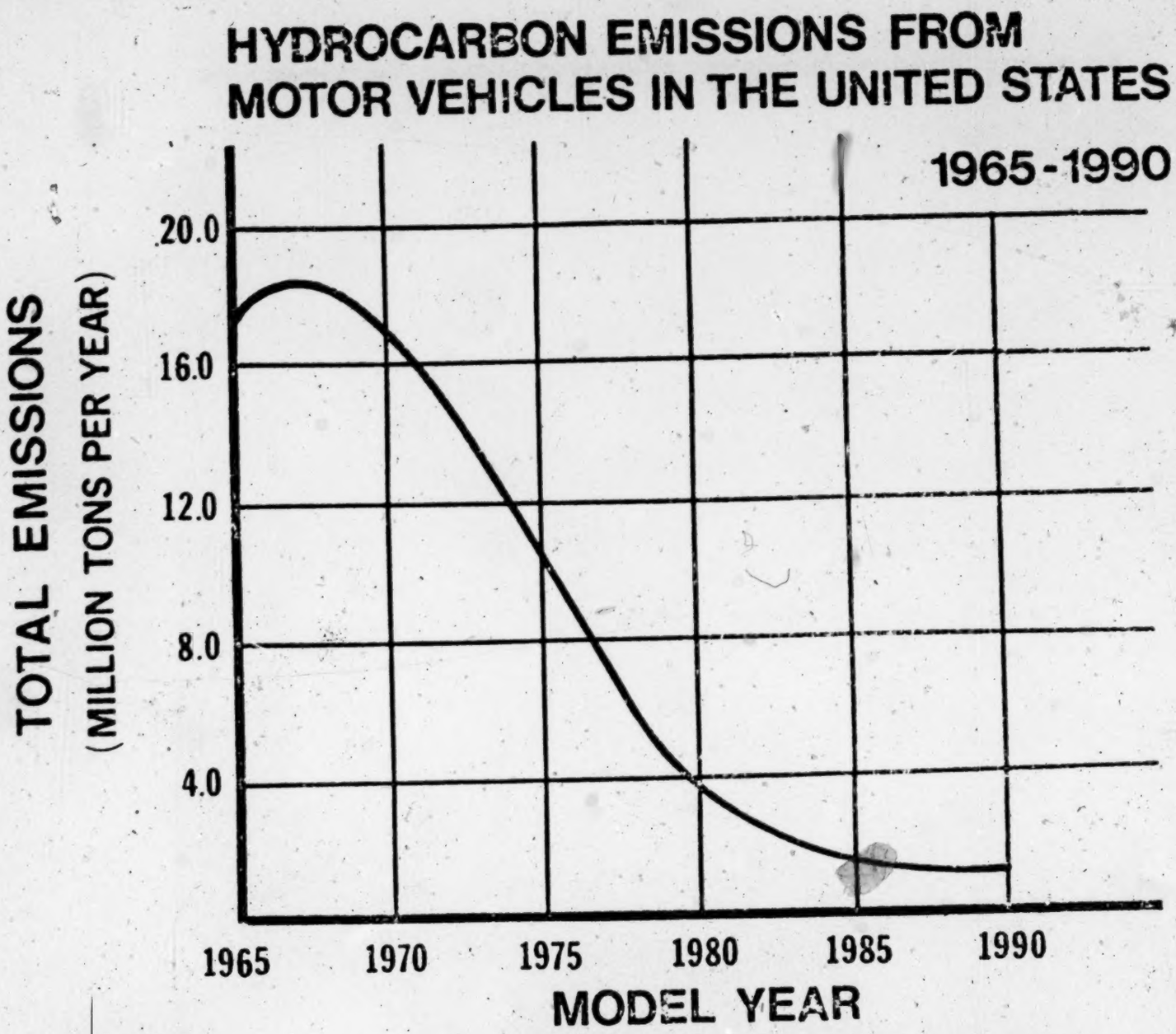

FIGURE 4

PROJECTIONS BASED ON ACHIEVING ALL FEDERAL EMISSION STANDARDS

ITEM 2—Technical Factors Involved in Control of Vehicle Emissions*

The predominant source of carbon monoxide (CO), nitrogen oxide (NO_x), and hydrocarbon (HC) from mobile combustion sources is the exhaust gas from gasoline-fueled engines. An example of the difficulties involved in eliminating exhaust emissions is portrayed in Figure 1-1. [Omitted.] This graph illustrates, for a typical range, that exhaust CO and HC emissions could be reduced by increasing the ratio of air to fuel to the point where more air is present than is required for complete combustion of the fuel to carbon dioxide and water (i.e., an air-fuel ratio greater than the stoichiometric ratio).[**] Maximum emissions of NO_x, however, would occur under such conditions. At very low air-fuel ratios, the NO_x emissions could be reduced, but high concentrations of CO and HC would be produced. At the extremely high air-fuel ratios where all three emissions could, theoretically, be low, operating difficulties such as misfire and stalling would be encountered with most commercially available, gasoline-fueled, internal combustion engines, causing poor performance and high emissions of CO and HC.

Various approaches and devices have been developed, and others are under development for controlling emissions of CO, NO_x, and HC from mobile sources. These encompass various principles of oper-

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* HEW, Control Techniques for Carbon Monoxide, Nitrogen Oxide, and Hydrocarbon Emissions from Mobile Sources, National Air Pollution Control Administration Publication No. AP-66, at 1-1, 2-11 to 2-15 (1970) (footnotes omitted).

[**] "Stoichiometric ratio" is a term used to define an air-fuel mixture which is theoretically of the correct ratio to obtain complete combustion without excess oxygen.

ation, degrees of effectiveness, complexity, and cost. It is the purpose of this document to present a review of these control methods and to summarize Federal and state emission control programs as they relate to emissions of CO, NO_x, and HC from mobile sources.

* * * *

2.2.3 Emissions

Contaminant emissions from a motor vehicle without emission controls originate from four sources: (1) the carburetor, (2) the fuel tank, (3) the crankcase, and (4) the engine exhaust. Hydrocarbon emission from the first source is the result of fuel vaporization during "hot soak" after shutdown.[*] Vaporization from the tank occurs primarily when the fuel temperature in the tank increases. Crankcase emissions are the result of blowby past the piston rings. These emissions, unless controlled, escape to the atmosphere through the road draft tube or the crankcase ventilation cap. Hydrocarbons and CO appear in the exhaust gas as products of incomplete combustion. Oxides of nitrogen result from the reaction of the nitrogen and oxygen contained in the combustion air at the high temperature prevailing during combustion.

Figure 2-9 [included: see following page] shows the approximate distribution of the emissions from a motor vehicle without any emission control devices.

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[*] "Hot soak" means the transfer of heat from hot components of an engine to cooler components such as the carburetor.

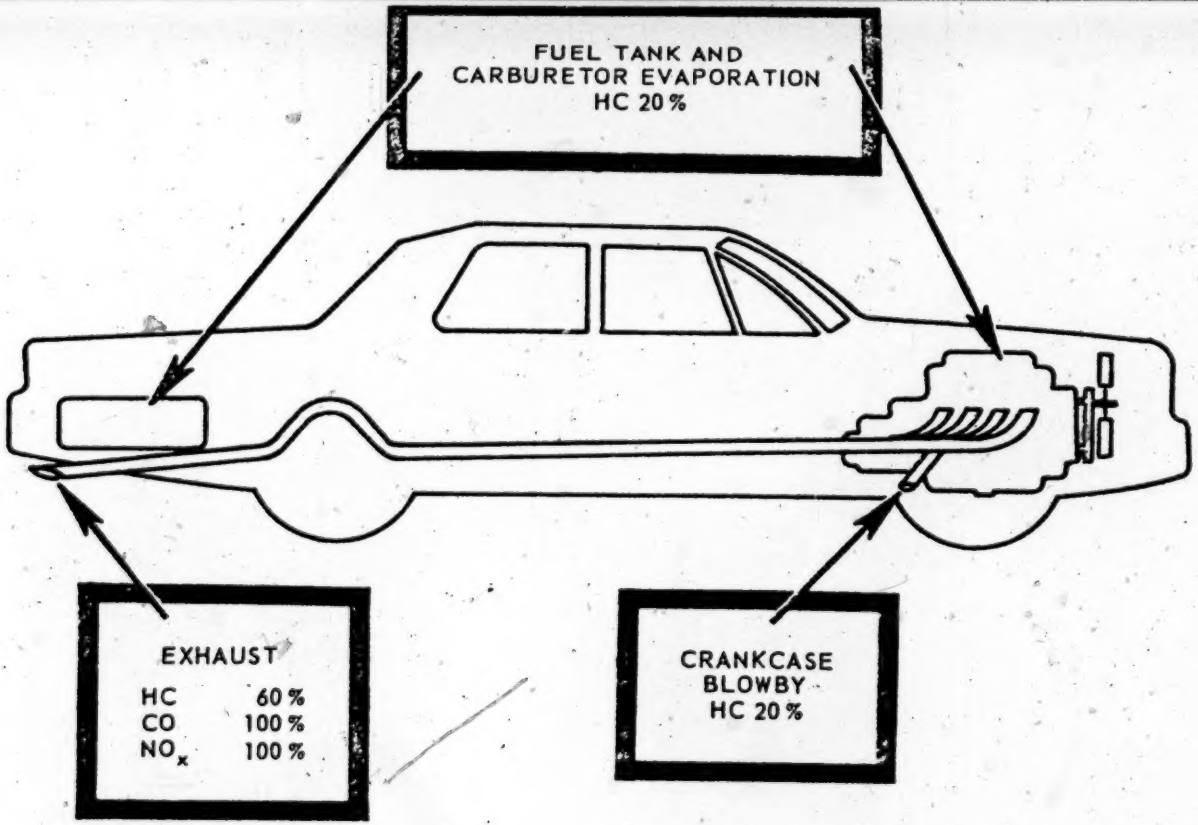

Figure 2-9. Approximate distribution of emissions by source for a vehicle not equipped with any emission control systems.

2.2.3.1 Nature and Formation of Emissions

When a hydrocarbon fuel is burned with the amount of air containing enough oxygen to oxidize it completely, the following basic reaction might be assumed to occur:

$$1.00\ CH_{1.85} + 1.460\ O_2 + 5.50\ N_2 \rightarrow$$
$$0.925\ H_2O + 1.00\ CO_2 + 5.50\ N_2$$

This reaction incorporates the following assumptions:

1. Most hydrocarbon fuels are accurately represented as consisting of 1.85 hydrogen atoms per carbon atom ($CH_{1.85}$).
2. The volume ratio of nitrogen (N_2) to oxygen (O_2) in the air is 3.76:1.
3. The fuel is burned completely to water (H_2O) and carbon dioxide (CO_2).
4. Nitrogen is inert and does not react with any other substances in the combustion chamber.

Assumptions 1. and 2. are quite true in practice. The formation of CO, NO_x, and HC in the combustion process indicates that assumptions 3. and 4. are not wholly correct.

2.2.3.1.1 CO and hydrocarbons. Combustion of the carbon in the fuel proceeds (simplified) through the following steps:

$$2\ C + O_2 \rightarrow 2\ CO$$
$$2\ CO + O_2 \rightarrow 2\ CO_2$$

The first reaction proceeds at a much greater rate than the second. Hydrogen in the fuel is oxidized to H_2O quite easily, provided sufficient oxygen is available locally for combustion. Poor distribution and mixing of fuel and air (which is likely to occur to

some extent when fuel droplets rather than fuel vapor are present) can result in incomplete combustion, and produce CO that is emitted in the exhaust gases. Although the overall air-fuel mixture may be stoichiometric, local conditions at a particular point in a combustion chamber may be far from stoichiometric. Such conditions of poor distribution are also conducive to increased hydrocarbon emissions.

Obviously, a fuel-rich (low air-fuel ratio) mixture introduces more fuel into the combustion chamber than can be completely burned, increasing emissions of CO and hydrocarbons. Also, an air-rich (high air-fuel ratio) mixture would provide excess air to partially offset the increased emissions that result from poor distribution and vaporization. The relatively large amount of excess air used in the diesel and gas turbine engines is the dominent reason for their relatively low emissions of CO and hydrocarbons.

Other factors may also contribute to increased emissions. One of these is the quenching of the flame at the relatively cool combustion chamber boundaries. Quenching can occur even if the fuel is perfectly vaporized and distributed throughout the chamber and is well established as the most significant mechanism leading to exhaust hydrocarbon emissions in properly designed spark-ignition engines.

Gross malfunction of the ignition or fuel induction systems can increase emissions of CO and hydrocarbons from spark-ignition engines. A misfire allows an entire air-fuel charge to be emitted. An automatic choke sticking closed or a very dirty air cleaner element can reduce air-fuel ratio, generally increasing emissions of CO and hydrocarbons.

Chemical equilibrium phenomena should be considered in a discussion of the formation of CO and hydrocarbons. Combustion reactions are somewhat reversible at high temperatures, indicating that products and reactants can exist in equilibrium at high temperatures. This partial reversal of combustion reactions at high temperature is known as dissociation.

If the equilibrium mixture is cooled rapidly (as it is by rapid expansion), it may be "frozen", meaning that its composition is unable to change, even though equilibrium considerations indicate that dissociation should be greatly reduced as the temperature is reduced. The rapid lowering of temperature and the accompanying decrease in the rate at which the mixture approaches the new low-temperature equilibrium, are responsible for the freezing of the composition of the mixture.

2.2.3.1.2 NO_x. Equilibrium considerations are very important in the discussion of the formation of NO_x. The reaction

$$N_2 + O_2 \underset{\leftarrow}{\rightarrow} 2\ NO$$

indicates that nitrogen may be oxidized to nitric oxide (NO) and exist in equilibrium with N_2 and O_2. The concentration of NO which may exist (theoretically) is significant only at high temperatures. This means that N_2 and O_2 do not unite to form a significant concentration of NO at low temperatures. Rapid cooling (as discussed in Section 2.2.3.1.1) can occur, however, and "freeze" the mixture with a relatively high concentration of NO. Generally, the higher the flame temperature to which air is exposed, the higher will be the resulting NO concentration after rapid cooling. The rate of reaction of NO back

to N_2 and O_2 is very low at low temperatures, even though equilibrium considerations favor the reaction.

It is essential to understand the difference between chemical kinetics, which involve the rate at which chemical reactions proceed (which is influenced by temperature), and chemical equilibrium, which involves theoretical concentrations of products and reactants as a function of temperature (and pressure for some reactions), without any consideration of the time which may be required to achieve equilibrium as conditions of temperature (and pressure) change.

From the preceeding discussion, it is apparent that NO_x emissions could be minimized by:

1. Reducing the flame temperature during combustion of air-fuel mixtures.
2. Providing insufficient oxygen to oxidize N_2.
3. Expanding (cooling) the mixture of combustion products at a slow rate which would allow NO to reform N_2 and O_2.

One of the most effective methods for reducing both flame temperature and the amount of oxygen available is to reduce the air-fuel ratio. A fuel-rich mixture burns at a lower temperature than a stoichiometric mixture because heat that could otherwise be used to heat the gases in the combustion chamber must be used to heat excess fuel.

Since oxidation of carbon to CO occurs at a greater rate than oxidation of CO to CO_2, and because combustion of a mole (specific number of molecules) of carbon to CO releases less heat than combustion of a mole of CO to CO_2, burning of a fuel-rich mixture results in a lower heat release than burning of a stoichiometric mixture. The overabundance of fuel

leaves little oxygen available to react with nitrogen. This rich-mixture approach would minimize NO_x emissions at the expense of greatly increased emissions of CO and hydrocarbons unless further measures were taken to control them specifically.

When a high air-fuel ratio charge is burned, much oxygen is available for oxidation of N_2, but the effect of low-flame temperature—resulting from the heating of excess air that does not enter into the combustion reactions—predominates, and reduces NO_x emissions. Presently available spark-ignited, gasoline-fueled engines exhibit poor performance under such conditions, however, probably because of the low velocity of flame propagation through a fuel-lean mixture, resulting in reduction of thermal efficiency. Operation at fuel-lean conditions can damage exhaust valves, and may cause backfiring through the carburetor at very high air-fuel ratios.

Other engine variables influencing the NO_x concentration in spark-ignited engine exhaust gas are:

1. Spark timing—Advancing the spark usually increases the oxides of nitrogen by increasing peak combustion temperature.
2. Engine speed—Increasing speed while advancing the spark and at constant or increasing torque (decreasing manifold vacuum) promotes NO_x formation with either lean or rich mixtures by allowing less time for the products of combustion to expand and approach equilibrium at a lower temperature. Increasing engine speed, however, while maintaining constant power and decreasing torque may tend to decrease NO_x formation by depressing combustion pressure and temperature. The

fact that power is proportional to the product of torque and speed suggests that it may be possible to "optimize" the engine characteristics for the lowest NO_x emissions at a given power level.

3. Compression ratio—Higher compression ratios, which increase peak combustion pressure and temperature, favor formation of NO_x, particularly under lean-mixture conditions.
4. Fuel distribution—NO_x concentration for a particular cylinder depends on the air-fuel ratio in the cylinder. Poor mixture distribution resulting in a near stoichiometric mixture in only a few cylinders of an engine causes a relatively large increase of NO_x for the entire engine.
5. Coolant temperature—Raising the coolant temperature tends to increase NO_x concentration.
6. Combustion chamber deposits—A greater deposit accumulation may increase NO_x concentration.

The high compression ratio of the compression-ignition (diesel) engine results in a high combustion temperature conducive to NO_x emissions. The gas turbine may prove to have the inherent capability for low NO_x emissions. Combustion at fuel-lean conditions in the primary zone, followed by dilution of combustion gases with secondary air at an optimum rate in a long combustion chamber to approach equilibrium at the turbine inlet temperature, may greatly reduce NO_x emissions. The cooling of gases at an optimum rate in a reciprocating-piston, internal-combustion engine is difficult to achieve because engine speed inherently sets the rate of expansion.

ITEM 3—The California Experience in Retrofitting Crankcase Emission Controls

A. *1963 California Statute Requiring Retrofit of Crankcase Emissions Controls**

The people of the State of California do enact as follows:

* * * *

Section 24393 of [the Health and Safety Code] is amended to read:

24393. (a) For the purpose of this section, the 10 months of January 1965 through October 1965 shall be considered as numbered consecutively from 1 through 10.

(b) Each passenger motor vehicle except those specifically exempted, or previously so equipped, shall, during the calendar year 1965, be equipped with a certified device to control emission of pollutants from the crankcase during or prior to the month in which the last digit of its license number corresponds with the number assigned to such month in subdivision (a).

(c) No passenger motor vehicle, except those specifically exempted, shall be registered after December 31, 1965, unless and until it is equipped with a certified device to control emissions of pollutants from the crankcase.

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* California Statutes, 1963, ch. 999, § 8, at 2264-68.

*3. 1964 California Legislative Hearing on Results of Retrofitting Crankcase Emissions Controls**

CHAIRMAN McMILLAN: Today's hearing of the Assembly Interim Committee on Governmental Efficiency and Economy is on the subject of legislation proposing to register and regulate persons in the business of motor vehicle repair. The two bills are Assembly Bill 2348 by Assemblyman Kennick and Assembly Bill 2638 by Assemblyman Meyers. This controversial matter has been before us for several sessions and has been considered in previous hearings by the Committee on Transportation and Commerce as well as our committee. We hope that a draft of a bill may be proposed at this hearing that will answer the needs of the public and the profession and that we can recommend to the legislature during the 65 session.

Public attention has been called to this problem in recent months due to new legislation providing for the installation of smog control devices on automobiles. Our committee has received numerous complaints from people who have had disastrous experiences. The device or the installation or workmanship has been faulty, resulting in damage to their cars or the cost of the work has been exorbitant. We would like to ascertain whether legislation of the nature proposed here could protect the public in such instances.

We expect to hear arguments for and against the proposed legislation this morning and this afternoon

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* Transcript, Assembly [of the State of California] Interim Committee on Governmental Efficiency and Economy, August 7, 1964: Hearing on Motor Vehicle Repair and Smog Control Devices, at 1, 97.

will go into the specific charges pinpointing the problems in the motor vehicle business.

* * * *

JENNINGS: My name is Lester Jennings.

* * * *

I have a prepared speech that will take about four minutes if that won't take too much time. There has been considerable discussion recently concerning the responsibility for engine damage caused by the presently required Crankcase Smog Control Devices on automobiles.

I would like to state that we are working with a group known as the Citizens for Smog Suppression.

There is apparently little dispute on the fact of damage, as Mr. D. A. Jensen, Executive Officer of the Motor Vehicle Pollution Control Board, has stated his department has received complaints on more than ½ of 1% of the 4 million presently installed devices, or more than 20,000 complaints. He also says, "If they (the automobile industry) have ½ of 1% complaints on any part of an automobile engine, it's a disaster."

It is further inconceivable that *all* who have experienced difficulties of this nature would have complained, or that even a large percentage would have.

The question resolves then to the area of responsibility for the damage with the Motor Vehicle Board claiming this is the fault, in the vast majority of cases, of the mechanics installing these devices. Apparently this accusation stems from the assumption the devices are complicated, delicate, finely machined and need such fine adjustments as to preclude the average mechanic being capable of properly installing same.

C. *1965 California Legislative Report on Results of Retrofitting Crankcase Emissions Controls**

The committee heard testimony on Assembly Bill 2348 by Assemblyman Kennick (1963 Session) and Assembly Bill 2638 by Assemblyman Meyers (1963 Session) in San Francisco on Friday, August 7, 1964. The two bills provide for the registration and regulation of persons in the business of motor vehicle repair. A follow-up hearing on AB 2638 was held in San Francisco on Wednesday afternoon, December 16, 1964.

Public attention had been called to this problem in recent months due to new legislation providing for the installation of smog control devices on automobiles. Many complaints had been received by the committee chairman and the authors of the bills that the devices had been improperly installed, charges were excessive, and motor damage had resulted.

* * * *

FINDINGS

1. Devices installed upon used cars are causing problems which have not developed in new cars which were engineered and designed for the use of a particular device.

2. It was asserted that smog control devices required on old used cars is the first such retroactive or "aftermarket" program and leads to forced obsolescence of cars. Additional motor tune-ups, new engines, etc., sometimes necessitated are an unfair and undue expense for the public. The com-

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* Assembly [of the State of California] Interim Committee Reports 1963-1965, Vol. 8, No. 8, at 31-34 (1965).

plaints, according to the Smog Control Board, are usually due to the incorrect installation of the device. All agreed that crankcase devices on new and old cars have increased mechanical problems and the need for additional upkeep and expense.

3. Charges were made that the devices even on new cars cause the consumption of more oil and gasoline which eventually can cause an increase in atmosphere pollution.

Recommendations

1. Present law concerning inspections should be reconsidered.
2. There should be a publicity program to inform the public of the necessity for servicing devices on cars.
3. A modification of the present law is recommended in cases where installation would be detrimental to the vehicle or the installation charge out of proportion to the value of the car, or the law should be changed to require only new cars to have such devices.

D. *1965 California Statute Suspending Crankcase Retrofit Requirement**

The people of the State of California do enact as follows:

SECTION 1. Section 27156.5 is added to the Vehicle Code, to read:

27156.5. Notwithstanding the provisions of Section 40000, the failure of any person to have a certified motor vehicle pollution control device for the control of emission of pollutants from the crankcase installed upon a used passenger vehicle, as required by Section 24393 of the Health and Safety Code, shall not constitute a crime; and no prosecution of such person for any violation of Section 27156 on account of such failure occurring prior to the effective date of this section shall be commenced or continued.

SEC. 2. Section 24393.4 is added to the Health and Safety Code, to read:

24393.4. Notwithstanding the provisions of Section 24396, the failure of any person to have a certified device for the control of emission of pollutants from the crankcase installed upon a used passenger vehicle, as required by Section 24393, shall not constitute a crime; and no prosecution of such person for any violation of Section 24393 occurring prior to the effective date of this section shall be commenced or continued.

SEC. 3. This act is an urgency measure necessary for the immediate preservation of the public peace, health or safety within the meaning of Article IV

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* California Statutes, 1965, ch. 3, at 872-73.

of the Constitution and shall go into immediate effect. The facts constituting such necessity are:

Under existing legislation, owners of used passenger vehicles in a number of counties in the state are required, commencing in January of this year, to have motor vehicle pollution control devices for the control of emissions of pollutants from the crankcase installed on their vehicles. This requirement has caused great concern and confusion throughout the state, and the Legislature is currently considering legislation designed to substantially eliminate this requirement and to clarify the law with respect to motor vehicle pollution control. If such legislation is enacted, and it appears probable that it will be, a substantial number of motorists in this state will either have incurred needless expense to have devices installed or will have run the risk, during the period prior to its enactment, of being prosecuted for a misdemeanor. This act provides that the failure of such persons to have the devices installed under the existing schedule of installment is not a crime; and in order to provide immediate protection for these persons it is essential that this act go into immediate effect.

E. *1965 California Statute Limiting Scope of Crankcase Retrofit Requirement**

The people of the State of California do enact as follows:

* * * *

Section 24390 is added to [the Health and Safety Code] to read:

24390. (a) Every 1966 or later year model motor vehicle subject to registration in this state shall be equipped with a certified device or devices to control emission of pollutants from the crankcase and exhaust.

(b) On and after December 1, 1965, every motor vehicle of 1963 or later year model subject to registration in this state shall be equipped with a certified device to control the emission of pollutants from the crankcase.

(c) Every motor vehicle of 1955 through 1962 year model subject to registration in this state upon transfer of ownership and registration to an owner whose residence is in a county or portion of a county within an air pollution control district which may function and exercise its powers shall be equipped with a certified device to control the emission of pollutants from the crankcase.

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* California Statutes, 1965, ch. 2031, § 4, at 4609.

ITEM 4—Early History of Vehicle Emissions Control in California

A. *1953 Legislative Report Discussing Discovery of Role of Hydrocarbons in Air Pollution**

It was known, of course, when the air pollution control district was created in 1947, that there was smoke in the air, coming from oil burning, rubbish burning, and the disposal of industrial wastes. This pollution could be seen and was immediately attacked.

* * * *

Sulphur dioxide was also known to be present in the air in large quantities, and it was known that it was one of the causes of reduced visibility. Tests showed about 600 tons were emitted into the atmosphere each day, about half of it from the chemical and oil industries, and the other half from oil-burning heat-and-power producing equipment.

* * * *

Dusts, fumes, and liquid particles were also known to be in the atmosphere, resulting from the metallurgical industries, from mining, earth processing, clay grinding, and asphalt production, etc. In 1948, approximately 100 tons per day were emitted into the atmosphere.

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None of these visible or known pollutants seemed to be potent enough even at high concentration to produce the eye irritation and crop damage which

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* Report of the Subcommittee of the Assembly [of the State of California] Interim Committee on Governmental Efficiency and Economy, Study and Analysis of the Facts Pertaining to Air Pollution Control in Los Angeles County 12-15 (1953).

was complained of in Los Angeles County. Search was made for other pollutants. Altogether more than 50 chemical compounds or elements were found in the atmosphere. These were given scientific analysis. The most important of these were discovered to be hydrocarbons or gasoline vapors.

It was known that large quantities of gasoline vapors were emitted into the air but gasoline vapor in itself appeared to be harmless. As a result of scientific studies, principally those of Dr. A. J. Haagen-Smit, of the California Institute of Technology, who was employed on a full-time basis by the air pollution control district, it was discovered that the hydrocarbons in gasoline vapor were oxidized by ozone and other substances when in the prescence of sunlight. The concentration of ozone in the atmosphere about Los Angeles is about 10 times that known in any other industrial area. Scientific research has shown that the hydrocarbons under these circumstances give rise to the irritating material which causes eye irritation and crop damage. They also give rise to aerosols or haze and to bad smelling compounds. These results can be produced in the laboratory artificially by the oxidization of hydrocarbons.

More than 2,000 tons of hydrocarbons were emitted into the atmosphere daily in 1948, about 1,100 tons from petroleum refining and tank storage, about 850 tons from motor vehicles, about 115 tons from delivery losses in petroleum marketing and 25 tons by other industries. Within the past six months a reduction of 100 tons per day has been effected by the use of vapor-recovery systems and properly designed storage tanks which prevent the emission of gasoline vapors. The Automobile Manufacturers Association in Detroit is working in close liaison with the district

in endeavoring to develop some process by which the emission from motor vehicles may be reduced.

* * * *

This very recent discovery of hydrocarbons in the air pollution picture has created an entirely new problem which was undreamed of at the time the district was created.

B. *1958 Report to Legislature on Progress in Developing Vehicle Emissions Controls**

My name is Smith Griswold. I am the Air Pollution Control Officer of Los Angeles County. It was my feeling, from the letter I received from you assemblymen, that your prime purpose was to discuss the progress made and the situation as it now exists in regard to control devices and I would pretty much like to stay with that and just comment briefly with what has happened since your committee met nearly two years ago, but I would like to go into detail so that there wouldn't be any misunderstanding of a rather complicated problem as to the availability of devices and as to their installation on the nearly six-million cars we have in California.

Since your last meeting, there have been very important breakthroughs in the field of device development. Now, I would like to outline briefly that a device development, a practical development, has to be broken down into several things. Now, four years ago the industry and all of us in this field felt that there were certain types of controls which could go

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* Transcript, Assembly [of the State of California] Interim Committee on Transportation and Commerce, December 1, 1958: Hearing on Automotive Smog Control, at 2-4.

on a car. Some of them were deceleration fuel shutoffs to control the emissions of hydrocarbons at the carburetor, on the intake side. At one time, five years ago, it was felt that that was an easy thing to do and most of our work was done in that field and while we still were working on the control at the exhaust, yet that being a very difficult job, necessarily would take much longer.

* * * *

[S]ome two years ago our improved instrumentation showed us that the deceleration cycle, instead of being about forty to fifty percent of the exhaust or of the problem from the automobile, it dropped to where it was around twenty to thirty percent. Now, it became quite obvious that the installation of even a deceleration fuel shutoff device, which is much simpler, much easier to engineer, would require several years, two to three years to install on the three million cars in Los Angeles County.

During those three years, the normal accretion of additional automobiles would be such in this area that by the time the device was installed, the percentage of performance would be offset by the increased number of automobiles, and therefore, there might not be or, in fact, reasonably would not be, an appreciable improvement in the general smog characteristics as we know them in Los Angeles, so the emphasis was shifted, rather drastically, not to the exclusion of the deceleration fuel shutoff, but to bringing along the exhaust-type control device with a consideration of the fuel shutoff as a complementary or supplementary device.

C. *1959 Legislative Report on Status of Vehicle Emission Control**

It is the purpose of this report to review past studies of the smog and noise nuisances produced by motor vehicles in the heavily trafficked metropolitan areas and to obtain information concerning the current status of research programs by industry and governmental agencies designed toward the development of principles and devices with which to combat the spread of noxious gases and annoying noise.

A. Smog Control Devices

1. *Background*

This committee delayed its hearing on the problem of control of that portion of smog which is induced by motor vehicle exhaust fumes until after the automotive industry had completed its symposium on this topic in the late fall of 1958. This was done in order that testimony might be taken and information obtained from which some conclusions could be reached on the progress of research in this field. From this testimony it was hoped that recommendations could be made concerning the type, or types, of devices which could be used as standards for installation on motor vehicles in California to reduce the output of smog-producing hydrocarbons and oxides of nitrogen from automotive exhausts. The conclusion by the Los Angeles Air Pollution Control authorities, based on nearly 10 years of research on the part played by

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* Report of the Assembly [of the State of California] Interim Committee on Transportation and Commerce, Motor Vehicle and Highway Problems 44-49 (Assembly Committee Reports 1957-59, Vol. 3, No. 6 (1959)).

the automobile in the increasing smog problem is the basis for the assumption that they are a major contributing factor.

* * * *

As a result of these assumptions concerning the part the automobile has played, and is playing, in the overall production of smog, not only in the Los Angeles area but elsewhere, the automotive industry in 1953 organized a Vehicle Combustion Products Committee under the direction of the Automobile Manufacturer's Association Engineering Advisory Committee, for the purpose of establishing an intensive, co-operative research program to develop methods for the control of the emissions of automotive exhaust gases which contribute to the air pollution problem. This action was undertaken primarily to assist the Los Angeles community to combat the automobile-induced factor of photochemical smog. The industry program has been conducted since that time at a cost of approximately one million dollars a year, as reported by them to an Assembly committee on October 22, 1958.

2. *Problems Encountered*

The problems encountered and which have not yet been completely and satisfactorily resolved by research teams representing both the Los Angeles Air Pollution Control District and the AMA are numerous. As pioneers in the search for intruments with which to accurately measure the effectiveness of principles which have been advanced to control the output of smog-producing gases from automobiles, the Los Angeles APCD believes that they have succeeded in effecting a breakthrough in this particular. As an

example, this improved instrumentation has made it possible for their researchers to eliminate the deceleration cycle of automotive operation as the principal cause of smog production by the automobile. While this discovery was of major importance, it has had the effect of increasing rather than decreasing the overall problem of control. This seeming paradox is, really, rather simply explained. While the problem of engineering a suitable device to control the gasoline intake to the motor so as to eliminate, or greatly reduce the quantity of a "rich" mixture of fuel passing through an idling motor was found to be a simple one, still the problem of installing such a device on the three million cars in Los Angeles County was a major one and would have required from two to three years to effect. Since it was discovered that the deceleration cycle was responsible for less than one-fourth instead of more than one-half of the automotive smog production, this would have been a major blunder.

But the elimination of the deceleration cycle as the major factor in automotive smog production has not reduced the scope of the problem. Instead, the improved instrumentation made it manifest that it would be necessary to control the gaseous output induced by all phases of car operation: that is, idling, cruising and acceleration as well as deceleration.

This meant that any control to be effective, would have to be located in the exhaust system. That is where research, currently, is being concentrated.

3. *Principles and Devices*

Two major principles for the reduction, percentage-wise, of motor vehicle exhaust fumes have been de-

veloped. These are the use of catalytic converters to oxidize the exhaust hydrocarbons and the installation of afterburners to complete the combustion of the fuel which has passed, unburned, from the engine into the exhaust system.

Both these principles represent breakthroughs in the overall problem of reducing the amount of hydrocarbons produced as the result of the emission of unburned fuel from the motor to the surrounding atmosphere. But these developments do not solve the major problem, that of developing a device (or devices), designed in such a manner so as to be effective, economical, and of a size and shape to be symmetrically and readily installed on all types of automobiles.

* * * *

4. *Finding of Facts*

a. That research by an agency of the Los Angeles Air Pollution Control District, over a period of about eight years, has convinced that body that between 60 and 66 percent of the eye-irritating, crop damaging, smog is caused by photochemically induced reactions between the hydrocarbons and oxides of nitrogen which are contained in automobile exhaust gases.

b. That the Automobile Manufacturers in 1953 began a co-operative attack, with the Los Angeles APCD on the problem of reducing the emissions of hydrocarbons and oxides of nitrogen from automobiles.

c. That in recent years it has been determined that control of the problem can only be effected by the installation of a suitable device in the exhaust system of automobiles, rather than by controlling the

fuel mixture and quantity during the deceleration and idling cycles of motor operation.

d. That the AMA, in conjunction with the Los Angeles APCD, have developed two main principles of control of automobile-induced smog. These are:

1. The principle of using a catalytic converter to oxidize or dissolve the unburned hydrocarbons. These are of several types, using different catalytic agents, such as:
   a. The Oxy-Catalyst (Houdry-GM) Converter
   b. The Vanadium Pentoxide (Ford) Converter
   c. The Vanadia-Alumina (Ford) Converter
2. The afterburner principle designed to complete the combustion of unburned gases in a furnace-type device in the exhaust system.

e. That at the time of going to print, no device, based upon either of the above principles, has been developed which could be installed on automobiles already in operation.

f. That some of the problems confronting the AMA in the design and construction of a suitable operating device, employing either the catalytic converter or afterburner principle of hydrocarbon control, are:

1. Design, including size, shape, weight, safety, and installation characteristics.
2. Quantity of production. Will there be a market for such a product in areas other than Los Angeles or, in the maximum, all of California?

3. Buyer opposition to cars equipped with smog control devices, regardless of local or state regulations. This opposition is partly an economic one. The first cost of the least expensive device is now estimated to be between $125 and $200 per unit. In all of California this could mean an outlay of $1,125,000,000, at least, using an average cost of $150 per unit for 7,500,000 cars. This is a modest estimate. In addition, such a great outlay should be followed up by an adequate inspection system to insure that the devices are operating in an efficient manner. This could require a statewide inspection system for all motor vehicles with the concomitant problems of what type of inspection operation would be required, and whether state or private ownership (or a combination of both), would finance the project. Also involved would be the number and cost of individual inspections that would be necessary.

g. That there is some evidence to support the contention of the Los Angeles APCD that research in the field of smog control should be augmented and speeded up by assistance from state funds.

h. That even if a suitable device is developed to reduce the air contaminants produced by automobile exhaust fumes, there is still the problem of air pollution stemming from fumes caused by the evaporation of gasoline from automobile carburetors and tanks. The Los Angeles APCD estimates that as much as 84 tons of irritants are produced on the hottest days from this source.

i. That there is also the question of whether or not the automobile-induced air contamination is a local or a statewide problem.

j. That the witnesses representing the Los Angeles APCD were unanimous in their praise of the AMA smog control research team for their active interest in attempting to solve the Los Angeles smog problem and for the spirit of co-operation that exists between the APCD and the AMA research groups.

k. That a contributing factor in the problem of smog control is the rapid growth of the Los Angeles area which amounts to an equivalent of the entire present population of Pittsburgh, Pennsylvania, every three and one-half years. Industries and automobiles are increasing at least proportionately to the population growth.

l. That the California Highway Patrol will be ready to set up testing procedures whenever adequate smog control devices are produced and suitable standards for their operation are adopted. This could well require statewide inspection of all automotive vehicles at stated intervals because of the engineering difficulties which are apparent at this time.

m. Dr. Haagen-Smit, of the California Institute of Technology, in a letter to Chairman Lee Backstrand of the Southern California subcommittee, and which was read into the record, suggested an alternative to attempting the control of automotive-induced smog by the installation of devices on all motor vehicles. This was that it might become necessary to legislate on the olefin content of gasoline to produce a fuel free from smog-producing ingredients.

ITEM 5—Social, Political, and Economic Factors in Air Pollution*

Environmental problems seldom stem from simple causes. Rather they usually rise out of the interplay of many contributing circumstances.

Misplaced Economic Incentives

Many individuals cite selfish profit seekers for environmental degradation, rather than laying much of the blame—where it belongs—to misplaced incentives in the economic system. Progress in environmental problems is impossible without a clearer understanding of how the economic system works in the environment and what alternatives are available to take away the many roadblocks to environmental quality.

Our price system fails to take into account the environmental damage that the polluter inflicts on others. Economists call these damages—which are very real—"external social costs." They reflect the ability of one entity, e.g., a company, to use water or air as a free resource for waste disposal, while others pay the cost in contaminated air or water. If there were a way to make the price structure shoulder these external costs—taxing the firm for the amount of discharge, for instance—then the price for the goods and services produced would reflect these costs. Failing this, goods whose production spawns pollution are greatly underpriced because the purchaser does not pay for pollution abatement that would prevent environmental damage. Not only does this failure encourage pollution but it warps the price struc-

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* Council on Environmental Quality, First Annual Report, *Environmental Quality* 12-16 (1970).

ture. A price structure that took environmental degradation into account would cause a shift in prices, hence a shift in consumer preferences and, to some extent, would discourage buying pollution-producing products.

Another type of misplaced incentive lies imbedded in the tax structure. The property tax, for example, encourages architectural design that leans more to rapid amortization than to quality. It may also encourage poor land use because of the need for communities to favor industrial development and discourage property uses, such as high-density housing, which cost more in public services than they produce in property taxes. Other taxes encourage land speculation and the leapfrog development that has become the trademark of the urban-rural fringe.

Values

Americans have placed a high priority on convenience and consumer goods. In recent times they have learned to value the convenience and comfort of modern housing, transportation, communication, and recreation above clean earth, sky, and water. A majority, like a prodigal son, have been willing to consume vast amounts of resources and energy, failing to understand how their way of life may choke off open space, forests, clean air, and clear water. It is only recently that the public has become conscious of some of the conflicts between convenience and a deteriorating environment.

* * * *

Population

Americans are just beginning to measure the magnitude of the impact of population and its distribution

on their environment. The concept that population pressures are a threat to the Nation's well-being and to its environment is difficult to grasp in a country which, during its formative decades, had an ever receding western frontier. That frontier ended at the Pacific many years ago. And it is at the western end of the frontier that some of the most serious problems of population growth emerge most clearly.

California continues to lure large numbers of Americans from all over the country, in large part because of its climate and its beauty. But as the people come, the pressures of population mount. Smog, sprawl, erosion, loss of beaches, the scarring of beautiful areas, and the congestion of endless miles of freeways have caused thoughtful Californians to consider stemming the continued uncontrolled development of their State. When the Governor's Conference on California's Changing Environment met last fall, it agreed that there was now a need "to deemphasize growth as a social goal and, rather, to encourage development within an ideal and quality environment."

* * * *

Technology

The major environmental problems of today began with the Industrial Revolution. Belching smoke from factory stacks and the dumping of raw industrial wastes into rivers became the readily identified, but generally ignored hallmarks of "progress" and production. They are no longer ignored, but the extraordinary growth of the American economy continues to outpace the efforts to deal with its unwanted byproducts.

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Mobility

The extraordinary, growing mobility of the American people constitutes another profound threat to the environment—in at least three major ways. The physical movement of people crowds in on metropolitan centers and into recreation areas, parks, and wild areas. Mobility permits people to live long distances from their places of employment, stimulating ever greater urban and suburban sprawl. The machines of this mobility—particularly automobiles and aircraft—themselves generate noise, air pollution, highways, and airports—all in their way affecting the environment.

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Limitations of Government Units

Most government agencies charged with solving environmental problems were not originally designed to deal with the severe tasks they now face. And their focus is often too narrow to cope with the broad environmental problems that cut across many jurisdictions. Agencies dealing with water pollution, for example, typically do not have jurisdiction over the geographic problem area—the watersheds. Control is split instead among sewerage districts, municipalities, and a multitude of other local institutions. To attack water pollution effectively may require establishing new river basin authorities or state-wide basin agencies with the power to construct, operate, and assess for treatment facilities.

* * * *

Information Gap

Sometimes people persist in actions which cause environmental damage because they do not know that

they are causing it. Construction of dams, extensive paving of land surfaces, and filling of estuaries for industrial development have in many cases been carried out with incomplete or wrong information about the extent of the impact on the environment. Furthermore, change in the environment has often been slow and exceedingly difficult to detect, even though piecemeal changes may eventually cause irreversible harm. Widespread use of certain types of pesticides, mercury pollution, and the use of dangerous substances such as asbestos occurred without advance recognition of their potential for harm.

ITEM 6—Varying Legislative Approaches to Inspection and Maintenance of Used Vehicles

A. *1971 California Air Resources Board Report on Reducing Emissions by Inspection**

The California motor vehicle emission control program requires the installation of control systems on motor vehicles as a means of reducing hydrocarbons, carbon monoxide and oxides of nitrogen. Success of this program depends on effectiveness of control systems at the time of installation and on their continual effectiveness during the service life of the vehicle. Once properly installed, systems for crankcase and evaporative emission control require relatively little maintenance and adjustment to continue to operate properly. Exhaust controls include the engine carburetion and ignition system and is much more sensitive to adjustment and maintenance.

In emission surveys, it is not unusual to find cars that discharge contaminants several times the average emissions. Many of these cars could be restored to a reasonable level of emission by minor adjustments or replacement of worn out ignition system components. Tests by the Air Resources Board of controlled vehicles have shown that the exhaust emissions often increase because of poorly maintained or maladjusted carburetion and ignition systems. The emissions would be lower if the vehicles are properly maintained and adjusted. Because of the potential benefits for emission reduction, interest has developed in a mandatory vehicle inspection program. As a

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* California Air Resources Board, A Report to the Legislature on Vehicle Emissions Inspection 1-2, 14-23 (July 1, 1971).

result, the 1970 Legislature directed the Air Resources Board to undertake a study to determine:

1. The reductions in automotive emissions that could be achieved by practicable vehicle emission inspection programs; and
2. The costs of carrying out such programs on a permanent basis.

The Board was to report its findings and recommendations to the Legislature by July 1, 1971. Should the Board recommend the initiation of any specific vehicle emissions inspection program, it was also to describe the estimate of the reduction in air pollution that would be achieved, the manner in which the program would operate, and the projected annual cost.

* * * *

V. Discussion

1. *General Comments on Northrop and TAC Conclusions*

The study by Northrop and the evaluation by the Board's Technical Advisory Committee have both indicated inspection and mandatory maintenance would be beneficial in terms of hydrocarbon and carbon monoxide reductions, but would increase oxides of nitrogen emissions. There are the common findings that inspection would be costly in terms of total annual costs, would require skilled personnel that are not currently available, and would take a period of several years to develop and implement. The consensus of both studies is also that to be of maximum benefit, the program must be operative within a few years.

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2. *Effects on Emissions*

Among the four possible methods of inspection studied, Northrop concluded that the key-mode test was the most cost-effective. If a statewide inspection system is carried out using this method, exhaust hydrocarbon emissions could be reduced by 200 tons per day statewide averaged over the first five years, or by about 20 percent.

Reducing exhaust hydrocarbons by 20 percent, in effect, produces about a ten percent decrease in total hydrocarbon emissions to the atmosphere. In terms of improvement in photochemical smog, the benefit would even be less because the reduction of hydrocarbon is offset by oxides of nitrogen increases which will be discussed later.

It is questionable that an inspection program could be realistically expected to be fully implemented in 3 to 4 years. By that time, another 30 percent of the older cars would be replaced by new vehicles which will be equipped with exhaust control systems. Since inspection is more effective in reducing hydrocarbon from uncontrolled cars than new vehicles, the benefits of a program will be less if it were not operative until 3-4 years from now.

The expected hydrocarbon reduction, of 20 percent would be similar to the effect of reducing motor vehicle usage by 20 percent, that would be accomplished by a ride-sharing program, or by voluntarily restricting the use of motor vehicles. Reducing motor vehicle use would, of course, be even more beneficial because it would reduce all emissions, not just hydrocarbons and carbon monoxide.

A negative aspect of an inspection and maintenance program for present cars is the adverse effect

on oxides of nitrogen emissions. The increase in these emissions would partially offset the gain in the other emissions. When cars have oxides of nitrogen control systems, inspection would be expected to reduce the emission of these compounds from malfunctioning control systems. However, at that time the expected reduction in hydrocarbon and carbon monoxide will be less because there will be fewer uncontrolled vehicles.

With respect to carbon monoxide, there appears to be significant benefit. Not only are the magnitude and percentage of reduction large by comparison to hydrocarbon emissions, such reduction will also have a noticeable effect on the ambient concentration of carbon monoxide since over 90 percent of carbon monoxide in the air comes from motor vehicles. Carbon monoxide is not the most critical problem in California from the standpoint of public response to air pollution. Incidents of high carbon monoxide concentration will be alleviated through the current control program. Because photochemical air pollution is the most troublesome problem in California, this is the problem the inspection program should be mainly designed to help alleviate.

3. *Cost*

An inspection and maintenance program, regardless to the method used, would be costly.

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4. *Personnel Needs*

Northrop and TAC concluded that sufficient personnel with technical skills required for the inspection program are not now available.

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5. *Other Implications of Inspection Program*

The method most suitable for a statewide inspection program, and the emission benefits to be realized will vary depending on whether the program is intended to controlled vehicles, to uncontrolled vehicles or to both. If it is for both, the distribution of controlled and uncontrolled vehicles in the vehicle population and the type of control systems used are important factors that must be taken into account.

* * * *

VI. Summary

1. The study by Northrop and evaluation by the Board's Technical Advisory Committee both indicate that inspection and mandatory maintenance is technically feasible and that it would achieve some reductions of hydrocarbons and carbon monoxide emissions from motor vehicles, but it would increase oxides of nitrogen. The decision to undertake an inspection program, however, should not be based on technical feasibility alone. The expected benefits of the program must be balanced against the adverse effects of oxides of nitrogen increase, costs, inconvenience to the motorists, the requirement of trained and skilled personnel.
2. On a long-term basis, regular inspection and maintenance is needed. All or most of the cars will be equipped with systems that involve engine modifications, advanced control systems or combinations of these approaches. Inspection and periodic maintenance are required to ensure their continual effectiveness.
3. Any inspection method, if it is to be suitable, must be adaptable to future requirements, because

technology of emission control is changing. What is appropriate today may be obsolete a few years later.

4. It would not be prudent to embark at this time on an inspection program which requires permanently committed installations and large capital investments. Such a program should be amenable to easy modifications.

5. To be effective, a mandatory inspection and maintenance program must be manned by qualified personnel and the programs must be closely supervised.

VII. Recommendations

1. A statewide inspection program that requires the acquisition of State operated installations, dynamometers and testing equipment, not be established at this time.

2. A pilot inspection program using highly qualified stations be undertaken.

3. The pilot program should include determinations of:

   a. The applicability of annual inspection involving mandatory diagnosis, adjustment and repair to minimize motor vehicle emissions.

   b. The extent of upgrading service personnel needed and the means by which upgrading can be accomplished.

   c. The advantages and the problems of this inspection and maintenance system under actual operating conditions.

B. *1971 California Law Authorizing Retrofit Requirement to Reduce Oxides of Nitrogen**

The people of the State of California do enact as follows:

SECTION 1. Section 39107.6 is added to the Health and Safety Code, to read:

39107.6. Notwithstanding Section 39107, the board shall set standards for devices to significantly reduce the emission of oxides of nitrogen from the exhaust of 1966 through 1970 model year motor vehicles, as determined by the board from a representative sampling of such vehicles, which the board has found to be necessary and technologically feasible to carry out the purposes of this part.

In setting standards under this section, the primary consideration shall be the greatest possible reduction of oxides of nitrogen.

SEC. 2. Section 39177.1 is added to the Health and Safety Code, to read:

39177.1. (a) Whenever an exhaust emission control device meeting the standards established by the board under Section 39107.6 is accredited pursuant to the provisions of this article and is available for installation as determined by the board, every 1966 through 1970 model year motor vehicle having a manufacturer's gross vehicle weight rating of under 6,001 pounds, which is subject to registration in this state, shall be equipped with such accredited exhaust emission control device in accordance with a schedule of installation to be determined by regulation

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* Senate Bill No. 578, November 16, 1971.

adopted by the board, in consultation with the Department of the California Highway Patrol and the Department of Motor Vehicles.

(b) Enforcement of the provisions of subdivision (a) shall be as follows:

(1) Vehicle inspections shall be conducted pursuant to Section 2814 of the Vehicle Code.

(2) Certificates of compliance shall be required upon initial registration, and upon transfer of ownership and registration pursuant to Section 4000.1 of the Vehicle Code.

(3) Certificates of compliance shall be required upon renewal of registration for the year 1973, pursuant to Section 4602 of the Vehicle Code.

(4) By such other authorized means as the board, the Department of Motor Vehicles, and the Department of the California Highway Patrol find practicable.

(c) After one or more devices are initially accredited, no device shall be accredited which is less effective than the one or ones initially accredited. Any subsequent accreditation of a more effective device shall not affect the accreditation of a previously accredited device.

* * * *

SEC. 5. Section 39177.4 is added to the Health and Safety Code, to read:

39177.4. (a) Any manufacturer of a device required by Section 39177.1 shall, as a condition of accreditation of such device by the board, agree that until there are two or more accredited devices suita-

ble for installation on motor vehicles of the same classification, such classification to be determined by the board, the manufacturer shall, with respect to his device for such classification of motor vehicles, either: (1) agree to enter into such cross-licensing or other agreements as the board determines are necessary to insure adequate competition among manufacturers of such devices to protect the public interest; or (2) agree as a condition to such accreditation that, if only one such device from one manufacturer is made available for sale to the public, the board shall, taking into consideration the cost of manufacturing the device and the manufacturer's suggested retail price, and in order to protect the public interest, determine the fair and reasonable retail price of such device and may require, as a condition to continued accreditation of such device, that the retail price of such device, including installation, not exceed such price as determined by the board. In either event, the retail price so determined by the board for a device required by Section 39177.1 shall not be in excess of thirty-five dollars ($35) per vehicle, installed.

(b) Accreditation may be revoked by the board after a public hearing for which notice has been given to the applicant who obtained the accreditation, if the actual cost of the device installed exceeds the cost, installed, estimated, or agreed to by such applicant.

* * * *

SEC. 8. This act is an urgency statute necessary for the immediate preservation of the public peace, health or safety within the meaning of Article IV of the Constitution and shall go into immediate effect. The facts constituting necessity are:

Presently required emission control devices for motor vehicles of 1966 through 1970 models do not eliminate enough of the oxides of nitrogen to insure the health and safety of the majority of California's citizens. It is now technically feasible to produce devices which will significantly reduce these dangerous substances. To insure that such devices are installed on most of such passenger vehicles within the shortest time possible, it is necessary to immediately begin programs for testing and approving such devices. Immediate passage of this act will also give manufacturers additional time to develop such devices.

C. *1971 Chicago Ordinance Requiring Inspection to Reduce Hydrocarbon and Carbon Monoxide Emissions**

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF CHICAGO:

SECTION 1. Chapter 17 of the Municipal Code of Chicago is hereby amended by adding a new article thereto to be designated Article IIA, Sections 17-2A.1 through 17-2A.7 inclusive, as follows:

ARTICLE IIA—AIR POLLUTION CONTROL: MOBILE SOURCES

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17-2A.2. It shall be unlawful within the City of Chicago on and after June 1, 1973 for any person

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* Chicago, Illinois, Amendment to Chapter 17 of the Municipal Code, Art. IIA, November 29, 1971.

to permit, allow or cause the operation of any spark ignition powered motor vehicle in the City of Chicago which emits carbon monoxide (CO) or hydrocarbons (HC) in the exhaust emissions of the vehicle in excess of the following standards when measured by an approved exhaust gas analytical system under test procedures propounded in the Code of Recommended Practices of the Department of Environmental Control:

Type of Vehicle	Model Year	Idle Exhaust Emission Standard: Hydrocarbons	Idle Exhaust Emission Standard: Carbon Monoxide
A. Non-Fleet	Pre-1968	1000 ppm	6.0%
Same	1968-1969	600	5.0
Same	1970 through 1974	500	4.0
Same	1975 and subsequent years	250	1.5
B. Fleet Vehicles	Pre-1968	600	5.0
Same	1968-1969	400	4.5
Same	1970 through 1974	300	3.5
Same	1975 and subsequent years	150	1.3
C. Passenger Carriers for Hire	Pre-1968	400	3.0
Same	1968-1969	300	2.0
Same	1970 through 1974	300	1.5
Same	1975 and subsequent years	100	0.8

D. All vehicles are required to have lower hydrocarbon and carbon monoxide emissions at 2250 plus or minus 250 rpm speed than at idle.

17-2A.3. It shall be unlawful within the City of Chicago on and after June 1, 1973 for any person to permit, allow or cause the operation of any spark ignition powered motor vehicle which emits visible smoke in the exhaust emissions at the exhaust outlet greater than No. 1 Ringlemann or equivalent.

17-2A.4. It shall be unlawful within the City of Chicago on and after June 1, 1973 for any person to permit, allow or cause the operation of any diesel-powered motor vehicle in the City of Chicago which emits smoke in the exhaust emissions of the vehicle in excess of the following standards when measured by an approved smokemeter under test procedures propounded in the Code of Recommended Practices of the Department of Environmental Control:

Type of Vehicle	Model Year	Mode of Test	Smoke Opacity Permissible
All	All	lugging	20%
All	All	accelerating	40%

17-2A.5. On and after June 1, 1973, every motor vehicle registered or subject to registration in the City of Chicago shall be inspected and tested annually for compliance with the emission standards established in Sections 17-2A.2, 17-2A.3 and 17-2A.4. The inspection and testing shall be performed at testing stations operated or designated by the Department of Environmental Control and in accordance with a schedule established by the Commissioner. The Commissioner shall issue a certificate of compliance to the registered owner of motor vehicles tested and found in compliance with the emission standards established by this Article IIA and it shall be unlawful for any person to permit, allow or cause the operation of any motor vehicle registered or subject to registration in the City of Chicago without first having secured said certificate of compliance; provided, however, that nothing herein contained shall excuse any person owning or operating a motor vehicle from maintaining said vehicle within the standards set forth in Sections 17-2A.2, 17-2A.3 and 17-

2A.4 of this Article on and after June 1, 1973; and provided, further, however, that nothing herein contained shall be deemed to preclude any appropriate enforcement agency from requiring a reinspection of any motor vehicle at such reasonable time or times as may be necessary following the certification herein provided.

* * * *

SECTION 2. This ordinance shall take effect on and after ten days from the date of its due passage and publication.

D. *Proposed New Jersey Law Requiring Inspection to Reduce Hydrocarbon and Carbon Monoxide Emissions**

TAKE NOTICE, that the New Jersey State Department of Environmental Protection will hold a public hearing on proposed Chapter 15 of the New Jersey Air Pollution Control Code: CONTROL AND PROHIBITION OF AIR POLLUTION FROM LIGHT-DUTY GASOLINE-FUELED MOTOR VEHICLES.

* * * *

This hearing will be held in accordance with the provisions of the Air Pollution Control Act (1954) as amended by Chapter 106, P.L. 1967.

It is recommended that at the time of the public hearing or prior thereto, a brief or briefs be submitted to the department on all matters desired to

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* New Jersey State Department of Environmental Protection, Notice of Public Hearing on Air Pollution Control Code, Proposed Chapter 15 (May 27, 1971).

be brought to the attention of the department concerning the provisions of the proposed new code Chapter 15.

The text of the code chapter to be considered in the public hearing is presented on the following pages.

* * * *

Section 1 DEFINITIONS:

1.1 PERSON: Includes corporations, companies, associations, societies, firms, partnerships and joint stock companies as well as individuals, and shall also include all political subdivisions of this State or any agencies or instrumentalities thereof.

1.2 MOTOR VEHICLE: Includes all vehicles propelled otherwise than by muscular power, excepting such vehicles as run only upon rails or tracks.

* * * *

Section 2 PUBLIC HIGHWAY STANDARD:

No person shall operate any gasoline-fueled, light-duty motor vehicle or permit such vehicle which he owns to be operated upon the public highways of the State if the vehicle emits visible smoke in the exhaust emissions or in the crankcase emissions.

Section 3 INSPECTION STANDARD:

3.1 Any gasoline-fueled, light-duty motor vehicle which is subject to inspection required by the Division of Motor Vehicles, as a condition of compliance with said inspection, shall not emit visible smoke in the exhaust emissions or in the crankcase emissions.

3.2 Any gasoline-fueled, light-duty motor vehicle which is subject to inspection required by the Division of Motor Vehicles, as a condition of compliance with said inspection after the effective dates set forth in Table I, shall not emit carbon monoxide (CO) and/or hydrocarbons (HC) in the exhaust emissions in excess of the standards set forth in Table I, when measured using an approved exhaust gas analytical system and the prescribed inspection test procedure.

Section 4 EXCEPTION:

The provisions of Section 3.2 of this Chapter shall not apply to motorcycles.

TABLE I

INSPECTION STANDARDS

VEHICLES SUBJECT TO INSPECTION REQUIRED BY THE DIVISION OF MOTOR VEHICLES

(Reference P.L. Title 39:8-10)

MODEL YEAR OF VEHICLE	EFFECTIVE 1972		EFFECTIVE 1973	
	CO(%)	HC(PPM)	CO(%)	HC(PPM)
Up to and including 1967	7.5	1200	6.0	1000
1968-1969	5.0	600	4.0	500
1970 and Later	4.0	400	3.0	300

* * * *

BASIS FOR PROPOSED CHAPTER 15

AUTOMOTIVE AIR POLLUTION IN NEW JERSEY

New Jersey is particularly vulnerable to pollution from automotive sources because it has the highest density of motor vehicles in the United States—440

per square mile as of December 1969. In the metropolitan area, this density is much higher. Hudson County, for example, has 4,780 vehicles per square mile. Because of this heavy concentration, it is mandatory that all emissions which pollute the atmosphere be held to the minimum attainable through reasonable regulation.

The ultimate goal of controlling and prohibiting air pollution from light duty gasoline-fueled motor vehicles is, of course, to eliminate motor vehicle emissions as an air pollution problem. The inspection test prescribed in proposed Chapter 15 will be a significant step toward attaining this goal. A periodic check on emissions from New Jersey vehicles will be provided.

General Effects of Motor Vehicle Emissions on New Jersey's Air

The Federal Environmental Protection Agency has issued outdoor air quality standards for several pollutants which are primarily products of engine combustion processes and evaporation of gasoline. Among these are standards for carbon monoxide and hydrocarbons (for which New Jersey inspection standards are now proposed) and nitrogen dioxide. Federal air quality standards also have been issued for photochemical oxidants, which result from interactions between hydrocarbons and nitrogen oxides in the outdoor air after they have been emitted by vehicles or other sources.

A description of the effects of these pollutants and a comparison of New Jersey's air quality with the standards follow.

CARBON MONOXIDE (CO): Carbon monoxide is a colorless, odorless gas which affects human beings by depriving the blood of oxygen. In sufficiently high concentrations, carbon monoxide can cause death by suffocation. However, lesser concentrations in confined areas, such as jammed streets or expressways, can affect human response time in varying degrees.

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HYDROCARBONS (HC): Hydrocarbon concentrations in the outdoor air normally are not sufficient to have direct health effects on people. But, when the hydrocarbons react with oxides of nitrogen in the outdoor air, irritating photochemical oxidants (smog) result under certain weather conditions. The level of reactive hydrocarbons present during the morning hours determines the level of photochemical oxidants which can be formed later in the day if bright sunshine is present.

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NITROGEN OXIDES (NO_x): Nitrogen oxides are important to the formation of photochemical oxidants. In addition, one of the nitrogen oxides, nitrogen dioxide (NO_2), is directly toxic to human beings and can affect the respiratory system. The Federal standard for nitrogen dioxide in the outdoor air is 100 micrograms per cubic meter of air (0.05 parts per million) annual arithmetic mean. This standard was met at the three monitoring sites in New Jersey in 1970 . . . . However, concentrations of total nitrogen oxides in the air still are sufficient for photochemical oxidant formation on certain days.

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PHOTOCHEMICAL OXIDANTS (O_x): Eye irritation and respiratory impairment are two undesirable ef-

fects of photochemical oxidants. Persons suffering from respiratory ailments are particularly affected. The process of oxidant formation is complex, requiring the presence of bright sunlight and relatively still air, as well as the proper mixture of hydrocarbons and nitrogen oxides in the air. Outdoor air quality monitoring data give ample evidence that oxidant formation can and does occur in New Jersey.

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Laboratory studies conducted by various researchers suggest that, while hydrocarbons and nitrogen oxides both are necessary precursors of photochemical oxidants, reduction in hydrocarbons should be the primary step for oxidant control. New Jersey's proposing of motor vehicle inspection standards for hydrocarbons and carbon monoxide, but not for nitrogen oxides at this time, is basically in conformance with this finding.

SMOKE: Visible smoke is another form of air pollution from motor vehicles which is particularly objectionable to the public. In addition to being a nuisance to the motorist following a smoky vehicle, excessive smoke gives rise to general visibility reduction, eye irritation and damage to materials.

SUMMARY OF GENERAL EFFECTS: The data presented above are highly condensed from several years of measurements and study of air pollution levels in New Jersey. They are intended only to provide some explanation of the complex issues involved in assessing the impact of certain specific types of automotive exhaust emissions on the outdoor air.

The background of scientific information relating to the photochemical oxidant phenomenon (smog)

resulting from NO_x and HC reactions in the outdoor air draws heavily upon studies conducted in Los Angeles, California. There is reason to believe that the behavior and effects of these pollutants in New Jersey are similar to those which occur in Los Angeles, although the effects are not yet so severe or serious.

It can be stated in general that hydrocarbons, which contribute to photochemical smog, affect wide areas of the state, and that hydrocarbons exhausted from vehicles in one part of the state can have an effect on air quality many miles distant. Carbon monoxide, on the other hand, has its harmful effects within the immediate vicinity of dense traffic, and may have little significant consequence a few thousand feet away. Carbon monoxide is essentially a center city problem.

Unnecessary emissions of hydorcarbons and carbon monoxide must be reduced, if the threat of motor vehicle pollution is to be reduced.

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NECESSITY FOR STATE CONTROL

In order to assure that vehicles manufactured with control devices continue to perform with a reasonable degree of effectiveness, some form of inspection must be implemented by the State. It is well recognized that proper maintenance of engines and control systems would be a major step toward improved vehicle emission control.

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1967 AND EARLIER MODEL YEARS: Automobiles produced prior to 1968 were not equipped with systems designed to meet any legal requirements for air pollution control. However, beginning in 1963 vehicle

manufacturers did voluntarily install crankcase ventilating devices for reducing hydrocarbon emissions in the form of raw gasoline. This source of emission, which results from gasoline being blown by the piston rings, is commonly referred to as "engine blowby." Proper maintenance of these blowby control devices is vitally necessary if they are to continue to be effective and to prevent engine damage. Although State inspection of these systems would be desirable, the procedure for testing is not well adapted to the New Jersey motor vehicle inspection system, and no standard for this source is proposed.

Excessive and unreasonably high levels of tailpipe exhaust emissions from vehicles of this model year group result when engines are improperly maintained or are out of tune. Studies conducted by the department indicate that, if the engines of all pre-1968 cars exceeding the proposed standards were to be properly tuned and maintained, the concentration, as measured at the tailpipe, of the carbon monoxide emissions from this group of vehicles could be reduced by as much as 56 percent and hydrocarbons by 55 percent. The proposed standards, to become effective in 1972, would require engine maintenance on about 38 percent of the vehicles registered this year in New Jersey, or 783,000 pre-emissions control vehicles. The 1973 standards would require about 50 percent to be serviced.

It may initially appear that the proposed standards are unusually restrictive. However, the department has tested and systematically maintained many of these excessively emitting vehicles. Corrective maintenance has reduced emission levels of such vehicles well below the standard. Proper tuning of pre-emis-

sions-control vehicles to meet the proposed 1973 standards would reduce the total emissions of carbon monoxide and hydrocarbons entering New Jersey's outdoor air by 12 percent and 26 percent respectively.

1968-69 MODEL YEARS: Vehicles manufactured during these model years were equipped with exhaust emission control systems or devices in accordance with Federal requirements. Improper or inadequate maintenance of the engine and/or the emission control systems can cause unnecessarily high emissions of carbon monoxide or hydrocarbons. Studies conducted by the department indicate that proper maintenance of these vehicles would reduce the concentration, as measured at the tailpipe, of carbon monoxide emissions by 68 percent and of hydrocarbon emissions by 63 percent. The standards proposed to become effective in 1972 would require approximately 36 percent of these vehicles to be serviced, and the 1973 standards approximately 45 percent. Approximately 275,000 vehicles would be affected by the 1972 standards, and 351,000 a year later. The resulting reduction of total emissions as measured in the atmosphere would be on the order of 6 percent carbon monoxide and 5 percent hydrocarbons with the 1973 standards.

1970 AND LATER MODEL YEARS: Motor vehicles manufactured during these model years are equipped with advanced design emission control systems or devices. Again proper engine maintenance and maintenance of the control systems and devices is vital if these vehicles are to perform in such manner as to benefit from legal and technological advancements. Based on somewhat limited studies, the department's data indicate that about 28 percent of these vehicles

would fail inspection, and would require tune-up to meet the 1973 standards. The data gathered by the department suggest a concentration reduction of 82 percent for carbon monoxide emissions and 44 percent for hydrocarbon emissions would be achieved. This reduction would reduce total carbon monoxide by 2 percent in 1973, and total hydrocarbons would be reduced by 1 percent. Percent reductions in this group would increase in time as more vehicles in this class are purchased and as they come to require maintenance.

* * * *

The establishment of inspection standards for all New Jersey vehicles can make a significant contribution to improved air quality, particularly in urban areas. However, to assure meeting outdoor air quality standards, further tightening of inspection procedures and standards and perhaps more restrictive controls on motor vehicle emissions and traffic flow must be envisioned for the future.

The concept as offered in this proposal can make a significant start toward reducing air pollution from motor vehicles by assuring that vehicles with control devices continue to perform properly. At the same time, it will create an awareness on the part of the motoring public, the automotive service industry and the automobile manufacturing industry of a need to share in the responsibility for cleaning New Jersey's air.

ITEM 7—California Experience with Exhaust Control Devices, 1964-1965

A. *Approval of Three Exhaust Devices for Factory Installation on New 1966 Model Vehicles**

WHEREAS, Walker Manufacturing Company, a subsidiary of Kern County Land Co., Inc. and American Cyanamid Co., Inc. filed a joint application for approval of an exhaust emission control system on September 14, 1961; and

WHEREAS, the system is described as the Walker-Cyanamid Exhaust Control System, with major components comprised as follows:

1. A catalytic exhaust converter (with no over-temperature bypass),
2. A diaphragm-type air pump,
3. A Carburetor throttle positioner, and
4. Specified engine adjustments and Annual tune-up;

* * * *

WHEREAS, Arvin Industries, Inc. and Universal Oil Products, Inc. filed a joint application for approval of an exhaust emission control system on February 16, 1961; and

WHEREAS, the system is described as the Arvin-UOP Exhaust Control System, with major components comprised as follows:

1. A catalytic exhaust converter (with no over-temperature bypass), and
2. A diaphragm-type air pump;

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*California Motor Vehicle Pollution Control Board, Resolutions 64-12, 64-14 and 64-15 (June 17, 1964).

WHEREAS, W. R. Grace & Co., Inc. and Norris Thermador Corp. filed a joint application for approval of an exhaust emission control system on May 15, 1961; and

WHEREAS, the system is described as the Grace-Norris Exhaust Control System, with major components comprised as follows:

1. A catalytic exhaust converter (with an over-temperature bypass),
2. A rotary vane-type air pump, and
3. Exhaust valve air injection;

WHEREAS, the Motor Vehicle Pollution Control Board finds that [these systems comply] with the exhaust emission standards of the State Department of Public Health of 275 PPM of hydrocarbons and 1.5% of carbon monoxide, as established pursuant to Sections 426.1 and 426.5 of the Health and Safety Code, State of California, and as determined according to established procedures of the Board; and

WHEREAS, based upon demonstrations of compliance with established procedures, the Board finds that [these systems meet] the criteria of the Board, as published in Title 13 of the California Administrative Code, Chapter 3, Subchapter 1, Article 2, Section 2103.

THEREFORE, BE IT RESOLVED,

That this Board, under the powers and authority granted in Chapter 3, (Commencing at Section 24378) Division 20 of the Health and Safety Code,

Issue a certificate of approval for the [Walker-Cyanamid Exhaust Control System, Arvin-UOP Exhaust Control System, and Grace-Norris Exhaust

Control System] for new 1966 and subsequent model motor vehicles, factory installation, in classifications (b), (c), (d), (e) and (f), pursuant to Title 13, California Administrative Code, Chapter 3, Subchapter 1, Article 2, Sections 2104 and 2105.

B. ***Approval of One Exhaust Device for 1962 and Subsequent Model Vehicles****

WHEREAS, American Machine and Foundry Co., Inc. and Chromalloy Corporation, filed a joint application for approval of an exhaust emission control system on March 7, 1961; and

WHEREAS, the system is described as the AMF-Chromalloy Mark XII-W "Smog Burner", with major components comprised as follows:

1. A direct-flame exhaust converter (with modulating bypass valve),
2. A venturi for secondary air induction,
3. A specially calibrated carburetor, and
4. Specified engine adjustments and annual tune-up;

WHEREAS, the Motor Vehicle Pollution Control Board finds that the system complies with the exhaust emission standards of the State Department of Public Health of 275 PPM of hydrocarbons and 1.5% of carbon monoxide, as established pursuant to Sections 426.1 and 426.5 of the Health and Safety Code, State of California, and as determined according to established procedures of the Board; and

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* California Motor Vehicle Pollution Control Board, Resolution 64-13 (June 17, 1964).

WHEREAS, based upon demonstration of compliance with established procedures, the Board finds that the system meets the criteria of the Board, as published in Title 13 of the California Administrative Code, Chapter 3, Subchapter 1, Article 2, Section 2103.

THEREFORE, BE IT RESOLVED,

That this Board, under the powers and authority granted in Chapter 3, (Commencing at Section 24378) Division 20 of the Health and Safety Code,

Issue a certificate of approval for the AMF-Chromalloy Mark XII-W "Smog Burner" for 1962 and subsequent model motor vehicles, in classifications (b), (c), (d), (e) and (f), pursuant to Title 13, California Administrative Code, Chapter 3, Subchapter 1, Article 2, Sections 2104 and 2105.

C. ***Staff Report on Device Approved for 1962 and Subsequent Model Vehicles****

Based on the test data and information submitted by the applicant, the Staff concludes as follows:

1. The AMF-Chromalloy exhaust control device system complies with the emission standards of the State Department of Public Health of 275 PPM of hydrocarbons and 1.5% carbon monoxide, as determined according to the established procedures of the Board.

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* California Motor Vehicle Pollution Control Board, Summary of Report on Exhaust Control Devices of American Machine & Foundry Company—Chromalloy Corporation, June 10, 1964, at 3-4.

2. The system complies with the Board's criteria with the following exceptions:

   (a) Adequate service life data beyond 12,000 miles are as yet lacking, nor has a specific warranty been finalized;

   (b) Comprehensive device servicing plans of the applicant beyond one year, in order that adequate performance, commensurate with the test data, be ensured, are as yet lacking;

   (c) Cost data concerning net cost of the device to the consumer is not completely definitive.

3. Affirmative action by the Board for factory installation approval implies heavy reliance on the applicant and the automobile manufacturer who utilizes the device, to scale up production of it, to correct slight malfunctions in it, and to adapt it to the variety of vehicle model options involved, without sacrificing its performance or durability.

4. A Device Servicing System which ensures proper annual maintenance of the control system is absolutely essential before the contribution of this device to reducing vehicular pollution will correspond to the emission reductions claimed for the device.

5. Because of items 3 and 4 above, it is considered necessary that the applicant be capable of, and willing to, stand behind his product during the life of the vehicles upon which it is ultimately installed.

F. STAFF RECOMMENDATIONS

1. The staff recommends certification of the AMF-Chromalloy exhaust control device.

2. The Staff further recommends that continued approval be understood to be contingent upon the applicant submitting monthly progress reports to the Board during the period prior to the time that devices are installed on vehicles, and at appropriate intervals thereafter; and that such reports show satisfactory progress in overcoming the problems cited in the conclusions above.

D. *Report to Legislature on Costs of Exhaust Devices for Used Cars**

LOUIS FULLER, APCO, LOS ANGELES COUNTY AIR POLLUTION CONTROL DISTRICT: Thank you Mr. Chairman and members of the committee, I have presented today to the Los Angeles County Board of Supervisors a report which is an analysis in depth of the existing legislation controlling motor vehicles. It takes into consideration the impact of the federal legislation, whereby the Secretary of Health, Education and Welfare, is now empowered to set standards of emissions from motor vehicles starting in the year 1968. A number of other factors are also considered in making this report: The rate at which vehicles are disappearing off the road because of age; the impact of the rising population, not only of peo-

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* Transcript, Assembly [of the State of California] Committee on Transportation and Commerce, March 8, 1966: Hearing on Air Pollution Control, at 2-4.

ple, but of motor vehicles; the extent to which gasoline is being consumed, and the projections of the use of gasoline in the future. These are the facts gentlemen, which are contained in that report.

* * * *

Assuming that there were devices to control the exhaust which were applicable, which could be installed on used vehicles, if there were such devices, which there are not at the present time, and if they could be installed in the years 1960 through 1965, during the three year period 1968 through 1970 you would have an initial reduction of 420 tons per day . . . .

* * * *

However, I think you have to consider that number one, there are no devices, and number two, the price ceiling of $65 including the installation cost, is something which does not intrigue the manufacturers of the devices, plus the fact that if and when a device were perfected, it would take some time for it to be throughly tested and approved. Then there would be the year of waiting before this device could become effective. And you have the tuning up, the production, distribution, and installation so actually you are talking about another three years, assuming that a device could be perfected this year. Now you will achieve practically the same results by the disappearance of the old vehicles off the highways.

ASSEMBLYMAN DANNEMEYER: Isn't there one device on the market now?

MR. FULLER: Not to my knowledge sir.

ASSEMBLYMAN DANNEMEYER: From our hearings last year I seem to recall that there was one device.

MR. FULLER: There was a device it was approved, but the price ceiling knocked that out. They cannot compete with the $65 price.

ASSEMBLYMAN DANNEMEYER: What price did they have.

MR. FULLER: I think they were around $85 to $90.

ASSEMBLYMAN DANNEMEYER: We had a device at the last session, didn't we, that would sell for $65?

MR. FULLER: I think Mr. Norris, or Norris Thermador did.

ASSEMBLYMAN DANNEMEYER: Is he out of the picture or something?

MR. FULLER: Yes, he is concerned about the fact that it takes two approved devices plus the fact that he doesn't know what action the Legislature might take before he would invest some millions of dollars in production of such a device. He would like to have some assurance, at least this is the indication I get.

MR. FRANCIS McLAUGHLIN, REPRESENTING LOS ANGELES COUNTY BOARD OF SUPERVISORS: Mr. Dannemeyer, as I recall we did have one approved device but as you recall the law stated that there had to be two or more devices approved.

ASSEMBLYMAN DANNEMEYER: Is there a company today that will produce and install an exhaust device at a cost not to exceed $65?

MR. FULLER: Not to my knowledge.

E. *Commendation of General Motors, Ford, Chrysler and American Motors for Contributions to California Emissions Control Program**

WHEREAS, [General Motors Corporation, Ford Motor Company, Chrysler Corporation and American Motors Corporation have] actively cooperated with the State of California in its program to control emissions from motor vehicles and;

WHEREAS, this assistance has included guidance and technical help on testing, development of instrumentation, including actual experimentation with cars and devices and;

WHEREAS, much basic research by [the companies named above have] materially assisted the State of California in defining its air pollution problem as a first step toward solution and;

WHEREAS, [the companies named above], together with other car companies, voluntarily installed crankcase control systems on 1961 model California vehicles and;

WHEREAS, on August 12, 1964, [the companies named above] told the Motor Vehicle Pollution Control Board in San Francisco they would meet California requirements for exhaust emission control for most 1966 model new vehicles sold in this State,

THEREFORE, BE IT RESOLVED,

That the California Motor Vehicle Pollution Control Board;

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* California Motor Vehicle Pollution Control Board, Resolutions 64-18, 64-19, 64-20, and 64-21 (August 12, 1964).

1. Congratulates [the companies named above] on this significant contribution to the health and well being of the citizens of California and further
2. Urges [the companies named above] to continue their outstanding developmental efforts to better control emissions from their motor vehicles.

F. *Approval of Chrysler Exhaust Emission Control System for New 1966 and Subsequent Model Vehicles**

WHEREAS, Chrysler Corporation filed an application for approval of an exhaust emission control system on July 11, 1963; and

WHEREAS, the system is described as the Chrysler "Cleaner Air Package" with major components comprised as follows:

1. A vacuum-controlled valve for deceleration ignition advance
2. Leaner carburetion
3. Retarded ignition at idle
4. Specified annual engine tuneup and adjustments

WHEREAS, the Motor Vehicle Pollution Control Board finds that the system complies with the exhaust emission standards of the State Department of Public Health of 275 PPM of hydrocarbons and 1.5% of carbon monoxide, as established pursuant to Sections 426.1 and 426.5 of the Health and Safety Code, State of California, and as determined according to established procedures of the Board; and

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* California Motor Vehicle Pollution Control Board, Resolution 64-36 (November 18, 1964).

WHEREAS, based upon demonstration of compliance with established procedures, the Board finds that the system meets the criteria of the Board, as published in Title 13 of the California Administrative Code, Chapter 3, Subchapter 1, Article 2, Section 2103,

NOW THEREFORE, BE IT RESOLVED,

That this Board, under the powers and authority granted in Chapter 3, (Commencing at Section 24378) Division 20 of the Health and Safety Code,

Issue a certificate of approval for the "Chrysler Cleaner Air Package" for 1966 and subsequent model Chrysler Corporation motor vehicles in classifications (b), (c), (d), (e) and (f), pursuant to Title 13, California Administrative Code, Chapter 3, Subchapter 1, Article 2, Sections 2104 and 2105.

G. ***Approvals of General Motors, Ford, American Motors, International Harvester and Kaiser-Jeep Systems for New 1966 and Subsequent Model Vehicles****

WHEREAS, General Motors Corporation filed an application for approval of an exhaust emission control system on October 5, 1964; and

WHEREAS, the system is described as the General Motors "Air Injection Reactor" with major components comprised as follows:

1. engine driven air pump
2. air injection into each exhaust port

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* California Motor Vehicle Pollution Control Board, Resolutions 65-17, 65-18, 65-19, 65-20 and 65-21 (July 14, 1965).

3. carburetor and distributor modifications
4. recommended annual maintenance; and

* * * *

WHEREAS, Ford Motor Company filed an application for approval of an exhaust emission control system on September 1, 1964; and

WHEREAS, the system is described as the Ford "Thermactor" with major components comprised as follows:

1. Engine-driven air pump
2. Air injection into each exhaust port
3. Carburetor and distributor modifications
4. Recommended annual maintenance

* * * *

WHEREAS, American Motors Corporation filed an application for approval of an exhaust emission control system on October 28, 1964; and

WHEREAS, the system is described as the American Motors "Air Guard" System with major components comprised as follows:

1. engine-driven air pump
2. air injection into each exhaust port
3. carburetor and distributor modifications
4. annual maintenance

* * * *

WHEREAS, International Harvester Company filed an application for approval of an exhaust emission control system on March 22, 1965; and

WHEREAS, the system is described as the International Harvester Air Injection Exhaust Control System with major components comprised as follows:

1. engine-driven air pump
2. air injection into each exhaust port
3. carburetor and distributor modifications
4. piston modifications on some engines
5. recommended annual maintenance

* * * *

WHEREAS, Kaiser-Jeep Corporation filed an application for approval of an exhaust emission control system on October 28, 1964; and

WHEREAS, the system is described as the "Air Guard" System with major components comprised as follows:

1. engine-driven air pump
2. air injection into each exhaust port
3. carburetor and distributor modifications
4. annual recommended maintenance

WHEREAS, the Motor Vehicle Pollution Control Board finds that [these systems comply] with the exhaust emission standards of the State Department of Public Health of 275 PPM of hydrocarbons and 1.5% of carbon monoxide, as established pursuant to Sections 426.1 and 426.5 of the Health and Safety Code, State of California, and as determined according to established procedures of the Board; and

WHEREAS, based upon demonstration of compliance with established procedures, the Board finds that [these systems meet] the criteria of the Board, as published in Title 13 of the California Administra-

tive Code, Chapter 3, Sub-chapter 1, Article 2, Section 2103.

NOW THEREFORE, BE IT RESOLVED,

That this Board, under the powers and authority granted in Chapter 3, (Commencing at Section 24378) Division 20 of the Health and Safety Code,

Issue a certificate of approval for factory installation of [these systems for 1966 and subsequent model engines in specific classifications], pursuant to Title 13, California Administrative Code, Chapter 3, Sub-chapter 1, Article 2, Sections 2104 and 2105.

H. *Exemption of Two Percent of 1966 Model Vehicles from Exhaust Control Requirements**

WHEREAS Section 24385(5) of the Health and Safety Code provides that the Motor Vehicle Pollution Control Board shall exempt classifications of vehicles from the mandatory provisions of the law when it is found that a device "not available"; and

WHEREAS after appropriate hearings this Board has found that there is, in fact, no exhaust control systems available for certain 1966 makes and models of motor vehicles; and

WHEREAS this non-availability is due primarily to the fact that at this time there is no practical engineering method to control these vehicles; and

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* California Motor Vehicle Pollution Control Board, Resolution 64-2 (January 20, 1965) (exhibit amended on six subsequent occasions through Jan. 11, 1966).

WHEREAS this exemption applies to only approximately 2% of the total estimated sale of American made passenger cars and commercial vehicles including half ton pick-up trucks.

NOW, THEREFORE, BE IT RESOLVED, That

1. The list of vehicles contained in Exhibit A attached to and made a part of this resolution [exhibit omitted] shall be exempt from the mandatory provisions of the Health and Safety Code and Motor Vehicle Code in respect to exhaust controls; and
2. This exemption shall apply to 1966 model new vehicles only.

I. *Effective Decertification of Exhaust Controls Not Developed by Vehicle Manufacturers**

WHEREAS the 1965 regular session of the State Legislature passed, and the Governor signed into law, legislation which establishes new laws and legislative policy for motor vehicle air pollution control, and

WHEREAS exhaust emission control devices approved prior to July 13, 1965, were evaluated, tested, and certified by this Board based upon State law and rules and regulations which have now been changed by this legislative action, and

WHEREAS these changes must be recognized and supported by appropriate Board action.

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* California Motor Vehicle Pollution Control Board, Resolution 65-26 (September 15, 1965); IV [California] Motor Vehicle Pollution Control Board Bulletin 1 (September 1965).

NOW, THEREFORE BE IT RESOLVED that the Certificates of Approval of Exhaust Emission Control Devices, for new cars which are not now in production and which were certified by this Board prior to July 13, 1965, shall be restricted to the extent that they shall be applicable only when the laws of this State provide for periodic compulsory servicing of exhaust control devices, and

BE IT FURTHER RESOLVED that the Certificates of Approval of Exhaust Emission Control Devices for new cars which are now in production and which were certified by this Board prior to July 13, 1965, shall be valid for the 1966 model year only, and

BE IT FURTHER RESOLVED that any exhaust device approved prior to July 13, 1965, for used cars shall be considered valid only when its cost is in compliance with the limitations in this respect which have been imposed upon used vehicle installations by the laws of this State.

BOARD RESTRICTS DEVICE APPROVAL

Unanimous action by the Motor Vehicle Pollution Control Board, meeting in San Francisco Sept. 15, restricted certification of four previously approved exhaust control systems and limited use of a fifth to 1966 model vehicles only.

The action was taken in the light of legal exclusion of mandatory maintenance for the systems. Without required annual maintenance, the Board expressed doubt that the systems would meet State standards after a year's normal operation.

At the same time, the Board was concerned over the cost to the consumer. Faced with a price limit for used vehicle exhaust controls set by the Legislature, Board members felt costs for the muffler-type system previously ok'd for used cars failed to meet that criterion.

"This does not mean that exhaust controls will not go on 1966 California vehicles," William Nissen, chairman, emphasized. "The Chrysler Cleaner Air Package is already being installed on '66 models rolling off the assembly lines, while GM, Ford, Rambler, Kaiser-Jeep and International Harvester are equipping their new cars with various versions of the air injection reactor system.

"What this does mean is that California must insist on more stringent testing methods for exhaust controls so that they can meet requirements with the maintenance practices presently typical of most California car owners," Nissen stated.

IN THE

Supreme Court of the United States

October Term, 1971
No. 45 Original

Supreme Court, U.S.
FILED
FEB 19 1972
E. ROBERT SEAVER, CLERK

STATE OF WASHINGTON, STATE OF ILLINOIS,
STATE OF ARIZONA, STATE OF COLORADO,
STATE OF HAWAII, STATE OF IOWA,
STATE OF KANSAS, STATE OF MAINE,
COMMONWEALTH OF MASSACHUSETTS,
STATE OF MINNESOTA, STATE OF MISSOURI,
STATE OF OHIO, STATE OF RHODE ISLAND,
STATE OF VERMONT and COMMONWEALTH OF VIRGINIA,
Plaintiffs,

v.

GENERAL MOTORS CORPORATION,
a Delaware corporation,
FORD MOTOR COMPANY,
a Delaware corporation,
CHRYSLER CORPORATION,
a Delaware corporation,
AMERICAN MOTORS CORPORATION,
a Maryland corporation,
AUTOMOBILE MANUFACTURERS ASSOCIATION,
a New York corporation,
Defendants.

PLAINTIFFS' MEMORANDUM ON CHOICE OF SUBSTANTIVE LAW AND BRIEF IN REPLY TO DEFENDANTS' SUPPLEMENTAL MEMORANDUM

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